The Iron Age

A Review of the Hardware and Metal Trades.

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Improvement in Screw Cutting Machinery.

Fig. 1 shows a new screw machine with the Parkhurst patent wire feed attachment. The device does not get out of repair, and is a great assistance in facilitating work. It feeds and holds the wire in position without stopping the machine or delaying the work, as the operation of setting forward the wire and firmly clamping it is performed by a single movement of a lever. The turret is of steel, is self-rotating and self-fastening, and the tools are held securely by convenient clamps. The cone has 3 grades, carrying a 1½ inch belt. The countershaft is fitted with Pratt's patent friction clutch pulleys. Case hardened wrenches and an oil tank go with the machine. The collets for this machine will receive wire from No. 0 to No. 10, inclusive, of Brown & Sharpe's wire gauge. We believe this machine is unsurpassed for efficiency and perfection of work and ease of manipulation. The revolving head may be made to receive six distinct tools, including gauging-stop for wire feed, so that every operation in the construction of a screw from the wire or rod, is performed successively, without any removal of the work, stopping, or change of the tools. A cross-rest with tool posts is attached to the wire feed machines, except when otherwise ordered. The Parkhurst patent wire feed is operated while the machine is running by a simple movement of a lever, and has any range of length that may be desired. It results in a great saving of time where screws are to be made from the wire or rod.

The second figure represents some of the screws made on this machine, varying in length, including the heads, from 1¼ inches to 5-16 of an inch, and in diameter of shank from 5-16 to 1-16 of an inch. They are of steel, iron or brass, and were produced by the usual box tools which will be furnished with each machine, as ordered. These tools are made by the Pratt & Whitney Company, of Hartford, Conn.

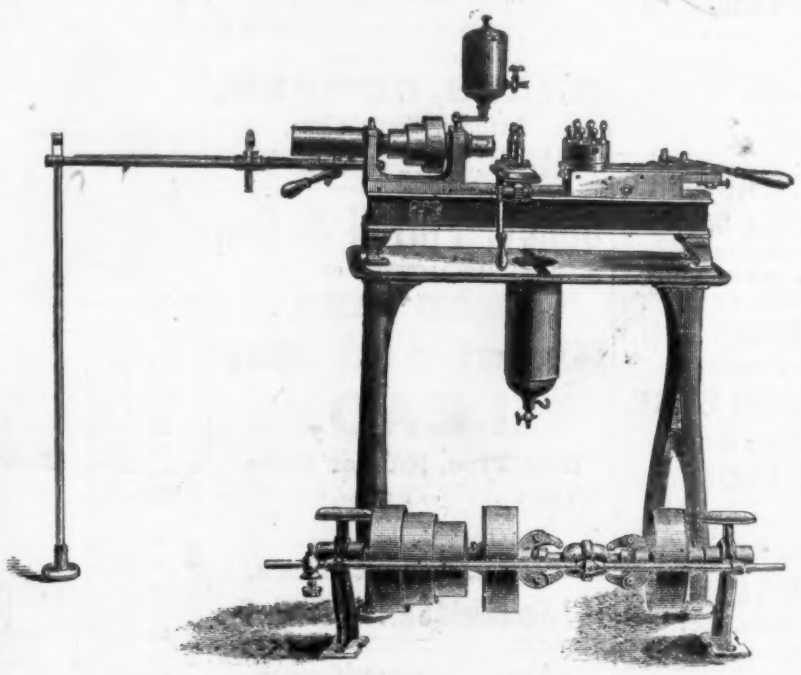

Fig. 1.

Fig. 2.

REVOLVING TOOL-HEAD SCREW MACHINE, WITH WIRE FEED, BY THE PRATT & WHITNEY CO.

The Government Tests of Iron and Steel.

United States Board appointed to test Iron, Steel, etc.—Committee F.—R. H. Thurston, L. A. Beardslee, U. S. N.; Q. A. Gillmore, U. S. A.

STEVENS INSTITUTE OF TECHNOLOGY,
Department of Engineering,
HOBOKEN, N. J., June 25, 1875.

The board appointed by the President of the United States, under the provisions of an Act of Congress, approved March 3, 1875, "to test iron, steel and other metals," has instructed this committee to continue an investigation of those modifications of the various properties of the metals which are produced by changes of temperature.

The committee are desirous of supplementing these experimental researches with such results of other experimental work and of observation as may be obtainable from authentic sources; they, therefore, solicit such contributions from investigators and observers as may be deemed valuable as assisting in the task assigned them.

The behavior of rails and of machinery exposed to the extremes of temperature observed in northern latitudes, where exposed to wear or to breakage, will be likely to afford valuable data. The character of the fracture and the texture of the abraded surfaces, as well as the statistics ordinarily collected, should be noted. Specimens exhibiting peculiarities of behavior or appearance, and photographs of masses which it may not be convenient to forward, will be of value. Where exact quantitative analyses of metals exhibiting unusual characteristics can be given, they will add effectively in the determination of the causes of such peculiarities.

The statistics of well managed railroads are expected to afford useful and reliable information. Rolling mills producing rails and other forms of rolled iron which are tested by the drop may be able to furnish more accurate statements of the effect of changes of temperature in modifying resistance to shocks.

Some experimental work has already been done in this field, and it is desired that the results of such researches may be communicated in as great detail and with as much accuracy as possible. Published monographs, reference to papers published in scientific, engineering or other periodicals, and unpublished papers, will be received as valuable contributions.

All assistance rendered the committee in the endeavor to ascertain the character of the change of the force of cohesion produced in the metals and their alloys by variation of temperature, to determine the mathematical expression of that law, and to obtain such formulas, either exact or approximate, as will make these results conveniently and practically available to engineers and constructors, will be properly acknowledged.

R. H. THURSTON, Chairman.

Working Heavy Grades in Switzerland.

A railroad has recently been opened to the summit of Mount Uetliberg, Switzerland, which overlooks, at a hight of about 1300 feet, Lake Zurich, and is much visited by tourists for the sake of the view. The road was designed in 1872, and it was finally decided to depend upon adhesion simply, limiting the grades to 7 per cent., or 370 feet per mile. The locomotives were built by Krauss & Munich, who agreed to supply them, weighing 27½ tons (55,000 lbs.), which could haul up this grade four cars, carrying 40 passengers each, gross load being 38,500 lbs. The total length of the road is about 30,000 feet, or more than 5½ miles. The lowest grade is 332 feet per mile, but 59 per cent. of the whole length is of grades exceeding 264 feet per mile. The curves are of 500 and 450 feet radius, the latter coinciding with a grade of 327 feet per mile. The track is of the standard gauge, and the rails, of iron, weigh 60 lbs. per yard. There are three tank locomotives of the Krauss pattern, with six drivers coupled, each 36 in. in diameter, and with a wheel base of only 6 ft. 8 in. They weigh 41,800 lbs. empty, and in service from 52,800 to 55,000 lbs. The heating surface is about 770 square feet, the diameter of piston 12⅛ in., the stroke 21½ in.

The passenger cars, of which there are six, have platforms and a central passage, as in American cars (which is the common construction in Switzerland), capable of accommodating 40 passengers. They have a box for baggage below the frame, between the wheels; their weight empty is 12,650 lbs. There are also three freight cars.

The road when complete will have cost about $300,000, gold.

The first ascent was made April 24 of this year. The engine pushed up three cars loaded with ballast and workmen, a total gross load of 27½ to 30 tons. This load was moved without difficulty at a speed varying from 8 to 10½ miles per hour, maintaining a steam pressure of 170 lbs.

The descent is made with compressed air, by means of an apparatus used on the engines of the Rigi Railroad. The speed was 15½ to 18½ miles per hour.

At trials made by the professors of the Zurich Polytechnic School the weight hauled was about 627½ tons, the traction exerted about 7500 lbs., and the work about 200 net horse-power.

A peculiar feature in the working of this road is the use of a jet of water against the rails, in front of the wheels of the locomotive, sufficient to wash the rails completely. It was observed long ago that the influence on adhesion of a slight humidity such as that deposited by a fog, and that of a veritable layer of water deposited by rain, are entirely different. On the Swiss Central Railroad a jet of water is used on the front wheels of certain engines to facilitate the passage around curves, and the effect on the durability of the tires has been remarkable; but this jet of water, which was only intended to lubricate the inside part of the railhead, moistens the whole surface in contact with the tire. No modification of the adhesion has been observed as the result of this; this jet of water does not dispense with the use of sand, while at Uetliberg absolutely no use is made of sand, but water is employed exclusively.

These facts were recently communicated to the French Society of Civil Engineers by M. Mallet, and we find them reported in *La Revue Industrielle.*

M. Mallet also described briefly another Swiss mountain railroad, the Rigi-Kulm Line and the lake of Zug, about seven miles long, six miles of it being worked with a peculiar cogged wheel arrangement, or something similar in effect, by which grades of 1056 feet per mile are surmounted, there being one section more than a mile and a half long with a grade very little less. The radius of the curves, which is uniform, is 600 feet.

Special attention was called to the locomotives by M. Mallet; ordinary boilers with horizontal tubes are used, but special arrangements are made to enable them to pass from a level to an inclination of one in five. In the first place the tubes are quite short, 7 feet 9 in., though longer than the tubes used in vertical boilers which are only 6 feet 2 in. Then the boiler is so placed as to have an inclination forward of one in ten when the wheels are on a level track, so that on an up grade of one in five it has only the same inclination backward.

In order to keep within the limits of weight of 35,200 lbs., the greatest care had to be taken in the construction of the engines. Steel was employed on the most extended scale; the boiler, with the exception of the fire box, the tubes, the frames, the axles, the wheels, the cogs and the machinery are all of steel.

One of these engines when tried generally made 140 revolutions of its drivers in a minute, and upon very steep grades the speed did not fall below 120 revolutions. The advance being nearly 11 feet per revolution of the adhering wheel, which turns 0·418 of a revolution to one turn of the driving axle, the speed per hour = 60 × 140 × 0·418 × 11, feet = 38,625 feet = 7·3 miles per hour. It had been a quite general opinion that such an engine could not run faster than about four miles an hour.

These engines push up a car of the Rigi pattern with seats for 54 passengers which weighs about 33,000 lbs. loaded. The trip to the summit is made in about an hour. Similar engines are used on a line from Rorschach to Heiden, where the steepest grades are 477 feet per mile, but there the engines take up three or four car loads of passengers, or a gross load of 25 to 33 tons.—*Railroad Gazette.*

California Borax.—The *Alta Californian* says: The great borax lake will afford a very large business. Very extensive works are now nearly completed for the refining and purifying of this borax for shipment. Millions of tons of crude borax are in sight in this immense deposit. Stimulated by the action of the Railroad Company, the Borax Company have put up large works and will soon be prepared to turn out from 20 to 50 tons of pure borax per day. This will add largely to the freights of the railroad. The deposit of borax is simply unlimited. It covers an area of 18 miles in length by six to eight miles in width, covered with crude borax from 3 to 5 feet thick. The crude material will average from 20 to 40 per cent. Ten thousand men would not take out the deposit in 50 years, and it is constantly increasing.

The Brown Iron Company's Works.

The Chicago *Journal* says: An arrangement has been made by the Joseph H. Brown Iron Company to enlarge the capacity of their works. Last March a contract was let for the erection of a mill which would produce 50 tons of iron a day. By mutual consent this contract has this now changed so as to make arrangements for a producing capacity of from 150 to 200 tons per day. The plans of the immense structure are now complete, and already the contracts for the machinery are being filled. To say that this will be the peer of any similar manufacturing establishment in the country is to say the truth. A detailed list of the machinery to be set up in their first mill proves that the company makes the assertion on good grounds. The list embraces the following pieces:

One 22 inch beam mill, with five stands of rolls for making heavy beams and machinery iron. This will be driven by an engine 40 x 48 inches, with a 35 ton fly-wheel, probably as heavy a one as is in use in this country.

One 28 inch muck train, with three run of rolls and a 35-ton rotary squeezer, to be driven by a 28 x 60 inch engine and a 26 ton fly-wheel. This will have capacity for muck iron second to none in the country.

A 14 inch merchants' mill, including five stands of rolls, to be driven by a 26 x 30 inch engine and a 15 ton fly-wheel. It will have all necessary fittings for producing miscellaneous iron.

A 9 inch mill, with five stands of rolls, for making hoop and guide iron, to be driven by a 24 x 36 inch engine and a 15 ton fly.

In connection with the above there is to be built all the necessary saws, straightening machines, muck shears, bar shears, crushers, pulverizers, etc., each tool being driven by a small engine.

One of the above trains will have a producing capacity of 90 tons each 24 hours. The cost of these immense works will exceed $2,000,000, and will be paid for as the machinery is put in place. It is expected that it will be completed by the 1st of September, and the company will be ready to receive supplies by November 1. Messrs. Robinson, Rea & Co., of Pittsburgh, furnish the machinery, excepting the Siemens furnaces and boilers, which will be constructed by the company itself. The plans contemplate the erection in the near future of blast furnaces and other mills of such a character as to give the establishment the highest rank among iron manufactories in the United States.

The company is composed of Samuel, George W. and Charles B. Hale, of Chicago; Richard Brown and William Bonnell, of Youngstown; James T. Torance, of Chicago, and Joseph H. Brown, of Youngstown, O., the latter gentleman being president of the company. They have the capital, and are reliable, and have located in a place adapted to their business.

Owners of property at South Chicago, where the works are situated, have donated ninety acres of land on the Calumet River. They have also constructed a slip 750 feet long and 14 feet deep, which is sufficient to let the largest vessels come close to the works. A railroad line has been constructed from the place so as to connect with all the lines leading out of Chicago. There is at hand every facility for obtaining cheap stone. With all these advantages the gentlemen see no reason why they cannot compete successfully with any other corporation, and, by the cheapness of their productions, be the center for supplying the Northwest.

A Dead Blast Furnace.

A correspondent of the Greenup (Ky.) *Independent* communicates the following in an interesting and chatty letter, under date of June 18th:

The valley of the East Fork, Lawrence county, Ky., with its large and well attended farms, its houses neatly whitewashed, its inhabitants thrifty and intelligent, and bridges constructed across its banks, is quite attractive, and more so was it at this time. A funeral sermon was to be preached at the graves of three citizens, lately deceased, the masons were to march around the graves, and everybody was going—so was I told. But I could not stop to attend the funeral rites at these graves. I left the crowd, following the course of East Fork, bound for a grave of a different nature, for the grave of Sandy Furnace. Nobody at Catlettsburg seemed to know anything about it—in fact its existence was positively denied by men who in their youth must have seen pig iron made at that furnace stacked upon the banks of the Ohio River, at the mouth of the Sandy. But some obliging merchant, better posted than others, at last headed me for Judge Rosse's place on Bolts Fork, 22 miles distant from Catlettsburg.

Big Sandy furnace is situated within sight of the Judge's house, 7 miles southeast from Geigersville, and 8 miles from the mouth of Bear Creek, the former shipping point on Big Sandy, whence the iron used to be floated to the mouth of that stream, there to be stacked or reloaded. Wurts, Jones & Co. were the last owners of this furnace property, originally consisting of 1500 acres of land in fee simple and 3000 donations. This firm suspended operations in 1855 and the lands were then sold at Sheriff's sale to Tom Means, Esq., who afterward traded it off to Judge Ross, the present owner. William Wurts was the enterprising man, who first came here in 1849 and afterward erected the furnace stack, which bears the following inscription:

SANDY FURNACE, No. 2.
1853.
M. WOLFFORD, BUILDER.

The stack still stands; so does the drop shed, the coal house and several of the dwellings, among which the manager's and the store house. But most of the buildings have gone to wreck. Their destiny is sealed. The short life of this place, full probably of strife, of toil, of hard work, of family happiness and misfortune, full of bright hopes and sad disappointments, may be added to the list of deserted villages, of which even this our new country can tell.

The yield of this furnace never exceeded 7 tons per day; and its lack of success is due to a peculiar irregularity of the geological formation. For while at Geigersville, 7 miles southeast, and at other points northwest from here, the Coalton coal vein is found in the upper parts of the hills, this vein appears here to be probably 70 feet under the surface, thus creating a basin, which has swallowed up the kidney and lower ores, leaving this locality nothing but a few ore veins of a rather doubtful quality. A top hill ore seems to have been the richest and most sought after, containing some 42 per cent. of metallic iron; this, however, was but little found. The limestone ore, on which large vein the furnace mainly depended, is not very rich in iron, but contains not less than 21·8 per cent. of lime, and could, therefore, be used only as a mixture with ores not containing any lime. This explains why even at the best it required 4 tons of ore to the ton of pig. The Rough and Ready ore, the highest workable vein of Lawrence, Carter and Greenup counties, whose location is some 200 feet above the red kidney ore, is also found at this place, running from 8 inches to 2 feet in thickness; but mostly mixed with calcareous rock, which renders its usefulness rather problematic. The iron made at this furnace had a good reputation for fine foundry purposes.

The Amboy *Democrat* says of the draw recently erected over the Raritan River at that place: This draw is, beyond doubt, a triumph of civil engineering. It is the longest in the world, measuring in its entire length 472 feet. It is known as a Pratt truss bridge, the trusses being 40 feet high in the center and 30 feet at the ends. Its width is 20 feet. The weight of iron is a little over 600 tons. The drum upon which the draw rests and rotates is 30 feet in diameter, the whole running upon a steel track. The whole structure, with very few exceptions, is composed of wrought iron of the very best quality. The center works upon 16 cone pivots, so arranged as to work with the least possible amount of friction. It is moved by rotating gear operated by a 20 horse-power engine attached to the drum, the whole being controlled with ease by the apparatus provided. Four hydraulic lifts are used to raise the whole structure from two to three inches before operating, by which a sure and perfect connection with the track at either end is assured, and the possibility of swaying with the wind avoided. The weight may be thrown entirely upon the center pivot or upon the drum, as necessity may require, or it may be equally distributed on both. Another device worth noting is that by the adjusting of 20 screw bolts around the pivot cap the whole draw may be raised or lowered as may be necessary to make the adjustment of the tracks perfect. The total cost of the draw is about $120,000; of the six iron spans, $60,000, making in all $180,000 for the iron work and machinery.

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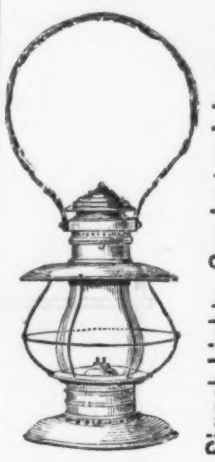

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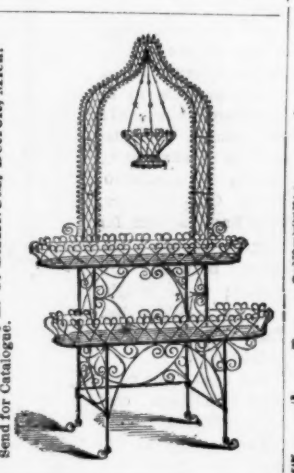

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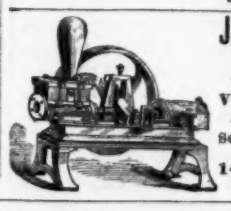

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We believe, however, that if such thoroughly practical men were to add a precise knowledge of what may be supposed to be taking place, in and out of the mold, the proportion of bad castings would be much reduced. It is not only the castings which—broken or blown in the molds— cannot possibly be used that ought to be included under the head of unsound castings. There are, throughout the whole range of castings, delivered apparently sound and complete from the foundry, a considerable portion in which it is only a question of time as to how long they will hold together. It is notorious that the greater proportion of breakdowns in fly-wheels, castings in motion, or castings under pressure, are occasioned by some inherent defect or liability to break in the casting itself, since the broken section is frequently of much more than the requisite area to resist any possible strain that can have occured. These are the unsound castings of which we would warn both purchasers and producers.

As to the unsoundness of castings produced by blow-holes or scum, this is usually patent to the eye of the founder, at least, though not always to that of the customer, after being puttied up, and can be tested by the blows of a small hammer upon any surface whose soundness may be suspected.

The tendency to form blow-holes is well understood among founders and may be caused in two ways: either by the imprisonment of the air originally contained in the mold, or by the generation of steam or gases from the sides of the mold and core. It is surprising how little power of reasoning from cause to effect there is as a rule among practical men, to whom both the cause and the effect may be perfectly plain and patent. Given a case where a casting is produced covered in places with blow-holes, the causes of the effects may be accurately defined. In the first place these blow holes are produced by the presence of a gaseous body displacing the metal. There are then two possibilities—either this gas is the legitimate air which has not been allowed to escape, or it is a further accumulation of steam or gas generated from the mold; neither of these possibilities should have existed. In the first place, any possible air pocket in the mold should be thoroughly ventilated by an escape air hole, and whilst the metal is being poured at one runner, the air should be allowed to escape elsewhere. In the second place, the mold and cores should be so thoroughly dry as to prevent the formation of steam; and further, their composition should be so carefully selected as to preclude the employment of materials liable to burn or to generate much gas. The ventilation from the cores should be specially looked to, as they are generally found to become damp after running the metal, even when thoroughly dried. In the case of large castings a great deal depends on the open and porous nature of the mold bed. If, then, the following points are always rigidly looked to, there should be little fear at any time of a porous or air-blown casting. 1. That whilst the metal is being poured at any runner, there should be free egress for the imprisoned air through another exit. 2. That all pockets or high portions of the mold should have separate additional air escape. 3. That the mold and core be thoroughly dry to prevent the evolution of steam as much as possible. 4. That the materials forming the mold and cores should be already burnt, so as not to give off gases with readiness on contact with the molten metal. 5. That where the casting is long and has a double surface, one above the other, an infinitely better casting may more readily be obtained by casting the same with its length considerably inclined from the horizontal, and pour on to the lower face first, or placed vertically and run with a head. A very frequent cause of the generation of an excessive quantity of gas in a mold is the mixture of too much coal dust and slack in the mold, and using the sand too wet for facility in molding.

The formation, however, of blow holes in castings is but one of the minor evils to which castings are heirs, and this principally because the results are so evident and plain to be seen. One of the most dangerous periods in the life of a casting is the cooling, when the contraction of the various parts in the mold is setting in. And we fear that the general principles, and laws of this shrinking are but little understood or appreciated even by founders themselves. It is, of course, an evident fact that many forms of castings will obstinately persist in parting during the shrinkage, but the simplicity of the laws causing this breakage is, we believe, but little realized.

The whole danger lies in the shrinking not taking place simultaneously. Given a casting of any complexity of form, there cannot be the slightest danger of breakage from shrinkage if the cooling throughout takes place simultaneously, and if the cores will give to the contraction. This latter necessary quality of the cores should be carefully seen to, as evidently, if the cores will not give, the casting must burst under the contracting strain. There is, however, great danger to the casting, when the cooling is not simultaneous, of many portions being placed under great tension, even to such an extent as to cause them to part. Now this simultaneous rate of cooling is very seldom to be obtained naturally in any casting. In a very great proportion of castings the sections of metal are by no means equal throughout, and even if they are, the inner portions of the casting are not able to radiate their heat away with the same facility as the outer ones. The rate of cooling is primarily dependent on the proportion of the outside cooling surface to the mass of the interior metal in any portion. The regularity of this proportion is one of the most essential points that should have the consideration of the designer. This is too often neglected, since the design is frequently made by men or youths unacquainted with the laws of cooling and contraction. But very often it is impossible to design the casting with equal masses of metal throughout, and then the rate of cooling will be inversely proportional to the relative areas of the sections compared with their perimeters. The rate of cooling will also, secondarily, depend on its position—whether surrounded by or in close proximity with other metal, or whether to the outside of the mold.

The success or soundness of a casting under contraction is, then, dependent in the first place on the designer, that all parts should, as far as possible, be of even proportion as to their mass and perimeter, and where this is impossible the responsibility will devolve upon the founder, who must, by artificial accelerated cooling by early uncovering, or by retarded cooling by hot plates, endeavor to produce a simultaneous rate of cooling throughout the casting.

There is still another most useful precaution in the hands of the designer, and that is to evade the disastrous effects of irregular contraction. We will now explain what may be considered to take place, during cooling in the mold, in a very common instance, that of a rigger. The outside face of a rigger is usually of very slight section, and being situated to the outside of the mold is in peculiarly favorable circumstances for rapid cooling. The rim will thus cool and contract much the first, whilst the arms and boss are still hot, the arms being slightly compressed to permit the shrinkage of the rim. When the arms and boss are then cooled and contract, the rim is already set and rigid, and cannot give to the contraction of the arms. These latter, then, being put under high tension, will probably part, as is generally seen to be the case in straight arm d riggers; each double arm, forming a diameter, having parted on one side or the other. This is a perfectly simple course of action under the natural laws, and is the key to ninety-nine out of a hundred unexpected breakages of castings, under slight strain. For in some instances, where the difference in time of cooling is but slight, and the section of metal strong, the contraction does not always produce breakage in the mold, but the castings are delivered, apparently sound, until subjected to a slight strain or sudden jar; when the already severely strained portions at once break, long before the normal breaking strain is reached. This peculiar danger of portions of the casting being, though apparently sound, yet under abnormal tension, may be well illustrated by the two following cases. A square plate of thin section, with a heavy boss in the middle, was taken out of the sand apparently sound, and placed till wanted in a yard. After some little time had elapsed it was found to have split spontaneously right across the center, and it was noticed that the slit was widest across the central boss, or strongest part, and scarcely reached to the outside edges, or weakest parts. Now this apparent paradox may be easily explained by reference to the above instance of the rigger, the action being exactly the same. The outside of the plate, offering large surface and small section, cooled much sooner than the heavy central boss and internal portion of the plate. The outside of the plate having thus taken its set compressing the liquid or hot metal within by contracting, offers a perfectly rigid resistance to the after contraction of the boss and center. The outside and center were thus straining against one another in opposite directions, not being able at first to part, but at last doing so under the influence, probably, of the expansion and contraction caused in it by the weather. The use of this foundation plate might thus have seriously endangered the safety of some structure or crane for which it was doubtless intended. The other instance is that of a circular valve box, with intermediate floor, carrying four valves; in this casting the metal floor supporting the valve seats, four in number, formed two diametric ties between the surrounding wall of the box, exactly similar in principle to the arms of the above mentioned rigger. Here the same consequences may be traced. The outer wall first cools and sets the valve floor afterward; but the outer wall being already set cannot give to this after contraction, so that the valve floor will thus be placed under great tension. This fact was well evidenced by the behavior of the castings. In some cases the castings broke in the mold, in others they broke spontaneously, whilst lying in the yard; again, in other cases, after they had been placed to their work, the shock of the valves soon deciding the fracture. In all cases the fractures took place in the smallest sections of the transverse ties, one in each tie.

Although such breakages as we have already pointed out may be, in great measure, obviated by the founder's proper attention to obtain simultaneous cooling throughout the casting, for, in such cases, all parts will contract *pari passu*, and no tendency to part should occur—yet it is almost safer for the designer, where possible, to make the safety of the casting independent of the attention of the founder. This may be done by never designing a diametrical tie the shortest distance between the two circumferential points. This is effected in riggers by making the arms of S shape; so that, when the after contraction of the arms sets in, the arms are able to give to the contraction, by flattening their arcs and thus becoming a shorter length over all without parting. This principle was afterward applied with every success to the above valve-box, by arching the valve floor. The intelligent consideration of these very simple laws of the contraction of castings in cooling, under all their varieties of form, is well worth the earnest attention of designers and founders.—*Iron.*

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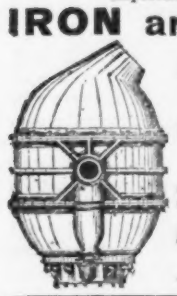
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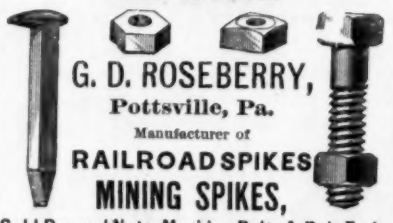
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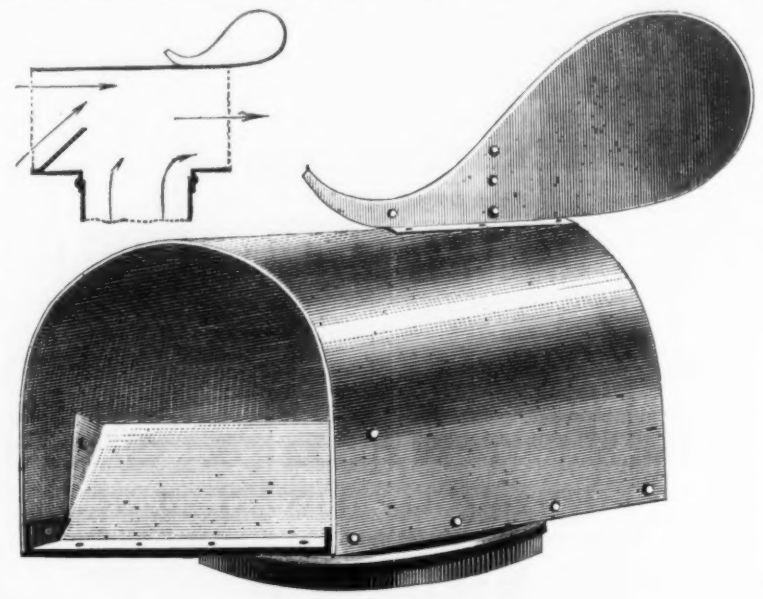
New Chimney Cowl.

Smoking chimneys are one of the nuisances of civilization, and smoking fires in general seem to have plagued men from the time when fires were first used till the present day. The ancients complained of them, and their laments and fault-finding over fire places that sent the smoke the wrong way, sound strangely like the letters which frequently come to *The Metal Worker* from our subscribers. For some chimneys we suppose no remedy can be found—yet we think that a large proportion of them may be benefited very much, if not entirely cured. During the past week Mr. John H. Reynolds, of Troy, New York, has brought to our notice the chimney cowl which we illustrate.

The idea embodied in this invention is to create a draught in the chimney by utilizing the power of the wind, and at the same time to prevent the possibility of a wind from any direction reversing or checking the draught. There are many chimneys in which there is no draught at all, either because they do not become warm, and so the air in them is cooled and has a tendency to rise rather than fall, or because cold currents from the outside cool the air within, and so prevent a draught. Beside these, rough inside surfaces and small flues often destroy the draught.

By placing a cowl upon the top of the chimney, downward currents of wind are prevented from stopping the draught, and if the cowl be properly made, the wind may be utilized in creating a draught. This is done by an application of the well-known principle of the injector. The cowl of which we speak consists of a short, semi-circular tube or pipe, at the



NEW CHIMNEY COWL.

mouth of which is placed a slanting partition. A current of air passing through the cowl is deflected by this partition, and forms a partial vacuum behind it. Into the vacuum thus created the smoke from the chimney rushes, producing a decided artificial draught, much more powerful than one would at first suppose possible. The small diagram shows a section of the cowl with spindle removed. The arrows show the direction taken by the wind and smoke, the vacuum produced by the outward rush of the air being filled by the smoke coming up from below, as indicated by the arrows.

In order to keep the cowl always face to the wind, it is made to turn upon a spindle, the bearing for which is of glass, in order to reduce the friction as low as possible. A vane is provided to keep the cowl head to the wind.

Saving Life at Sea.

The London *Times* of the 2d instant says: An experiment, which there is good reason to believe may prove something more than a mere experiment, was tried on Monday evening on the Thames, immediately in front of the Houses of Parliament, with what are known at the Admiralty as Holmes' Shipwreck and Distress Signals. The signals are the same as those which two years since were held to have been the most successful in the Northfleet experiments on the Serpentine and on the Mersey. They have, moreover, been tried on board the Challenger, and the trial would seem to have been very satisfactory. It is said that they never failed to light on striking the water, and would keep alight for twenty or thirty minutes, and the opinion of those who made the trial is that they would be extremely valuable for indicating a fixed position at sea, either for marking a danger or for denoting the whereabouts of a life buoy, and that they would be in any case far superior to the light on the service lifebuoy. Fortunately for the crew of the Challenger, the report from which we have quoted is unable to furnish us with any information as to the practical result of such a light in the case of a man overboard at night, as no such case occurred; but we have a very clear statement from Capt. Gillon., of the ship Bosphorus, which we may be excused from giving in full: "At 9:30 p. m. on the 7th of August, in lat. 48° N., and long. 32° W., it being a dark night, with a strong wind and heavy sea running, a man named John Rowe, a native of Plymouth, fell from the jibboom into the sea. I heard his voice as he was passing the stern, and hove the Holmes' rescue signal light to the sound, and it at once showed a very bright light.

"The ship at the time was going eleven miles an hour, and of course was a considerable distance from the man before she could be stopped and a boat got out; but through the light pointing out the spot where the man was he was found and received on board in twenty-five minutes; but had there been no light it would have been impossible to save him in such a sea and on such a dark, cloudy night; and, strange to say, though life buoys, oars, gratings, etc., were thrown overboard, none of them were seen by the man in the water nor yet by the eight men who manned the boats. I may say I distinctly saw the light forty-three minutes; it was then three miles off."

It may be said that so far as it was possible to form an opinion from what was to be seen on the Thames last night, the signal lights in question fairly carried out the favorable verdicts pronounced upon them. They were set afloat from a small boat under Westminster bridge about 9:15, wanting about an hour and a half to high water, the night being clear and still, and what little wind there was blowing with the tide, and that could still be seen burning brightly beyond the arches of Lambeth bridge. Under such circumstances it would, of course, be idle to pretend to estimate from yesterday's experience what their value really would be in a strong gale with a heavy sea on; but there can be no doubt that the light they show is not only brilliant, but lasting, and one which, with the report of the Challenger, we would be inclined to say would be useful in indicating a fixed position at sea to those on board, though how far they would serve to show a man in the water what was being done for his aid we are hardly in a position to say.

Compression in Casting.—Col. Uchatius, director of the Arsenal at Vienna, whose name is coupled with a peculiarly fine and tenacious steel made in Sweden, has lately given the results of an exhaustive series of experiments on compressing bronze when in a state of fusion, and otherwise treating so that it acquired many of the properties of steel. With an alloy of 90 per cent. of copper and 10 per cent. of tin, and a pressure of 80 tons, a very hard, tenacious metal was produced, but one with little more elasticity than ordinary bronze. On cold rolling this bronze cast under pressure into an ingot, its power of resistance, its elasticity and hardness were increased. After repeated experiments it was found that an alloy of 92 per cent. of copper and 8 per cent. of tin was the best and most economical. In casting the bronze to produce a homogeneous mass, after repeated and varied trials a double mold with a solid forged copper core 0·05 meter in diameter was decided to be the best. The bronze produced in this manner is declared to have all the hardness, homogeneousness, and power of resistance of steel tubes. Its wearing qualities are as great, and the cost of bronze guns made in this way is much less than steel if the value of the old metal is taken into account.

Lead.

In an article in the San Francisco *Scientific Press*, Mr Henry G. Hanks thus summarizes pretty much all that is known of lead:

Metallic lead has a bluish gray color. It is usually tarnished, in which case it has no luster, but when freshly cut shows a surface highly metallic and brilliant. It is a soft metal, very malleable, easily fusible and volatile at a white heat. It is scarcely acted on by hydrochloric acid or dilute sulphuric acid; but moderately dilute nitric acid dissolves it, more readily if heat is applied.

The presence of lead in any substance containing it may with certainty and ease be determined by heating the sample on a piece of well burned willow charcoal, in one portion of which—nearest the flame—a small cavity or depression has been made, in which the assay may be placed, a little carbonate of soda added and the flame of an oil lamp or large candle turned upon it by means of the mouth blow-pipe. The direction of the flame at first should be downward until the assay begins to melt, after which it should be blown softly and nearly horizontally across the charcoal. If lead is in the assay, a coating will form on the charcoal which is lemon yellow when hot, and sulphur yellow when cold. Other volatile substances which may be present will also form coatings, but they will be distinct, and at distances more remote from the assay, nor will they be the same color. Zinc, like lead, gives a yellow coating, which, to the inexperienced, might lead to mistakes, but if the charcoal is allowed to cool the zinc coating will become white, by which reaction it may be distinguished.

The following are the reagents used in the determination of lead in the wet way, and the reactions which occur:

Hydrosulphuric acid or sulphide of ammonium added to solutions of lead salts gives black precipitates of sulphide of lead which are not soluable in cold dilute acids, alkalies, alkaline sulphides or cyandie of potassium, but the precipitate may be decomposed by boiling nitric acid. The acid must be dilute or a part of the lead will be changed to the sulphate and remain insoluble. Soda, potassa and ammonia throw down basic salts of lead in the form of white precipitates which are insoluble in ammonia. The exception is solution of acetate of lead, from which pure ammonia (free from carbonate) does not immediately produce a precipitate, a soluble triacetate of lead being formed.

Carbonate of soda produces a white precipitate of basic carbonate of lead, when added in solution to the solution of any lead salt. This precipitate is not soluble in excess of the precipitant nor in cyanide of potassium.

Hydrochloric acid, or the soluble chlorides, produce in solutions of the lead salts, if concentrated, a heavy precipitate of chloride of lead, which is soluble in a large quantity of warm water.

Sulphuric acid and sulphates throw down from lead solutions a heavy precipitate of sulphate of lead, which is nearly insoluble in water and dilute acids, but dissolves readily in solution of citrate of ammonia.

Chromate of potassa when added to a solution containing lead throws down a beautiful yellow precipitate of chromate of lead, which dissolves in potassa, but which is nearly insoluble in nitric acid.

It should be understood that the above reagents are in solution, and are to be added in every case to solutions of substances containing lead.

Lead occurs in nature in a variety of forms, but most of the metal furnished to commerce is from galena or sulphuret of lead. Native lead is reported as occurring in globules at Alston Moor, and at the mines near Carthagena, Spain, but never in sufficient quantity to work, or even to furnish specimens for the cabinet of the mineralogist.

Galena, the most abundant ore of lead, has a metallic luster. Its color and streak are pure lead gray. When broken it is still cubic in form, even when reduced to the finest powder. It always contains silver and sometimes selenium, zinc, cadmium, manganese, gold, antimony, copper and iron. Even platinum is said to be found in galena in France.

It is a mistake to suppose that any external appearance indicates the quantity of silver in a sample of galena.

There is a variety of galena which is called supersulphureted lead. The excess of sulphur results from the decomposition of a portion of the galena, setting the sulphur free.

There are several minerals which resemble galena, and may easily be mistaken for it. The most common is micaceous iron, a variety of hematite. The resemblance of this mineral to galena is sometimes so striking as to deceive the inexperienced. It may, however, be distinguished by the following tests: When heated on charcoal it gives off no odor of sulphur, nor can it be fused before the blow pipe. No metallic beads are formed when carbonate of soda is added. After strong heating it becomes red, and on cooling is found to be attractable by the magnet.

Galena in Missouri and Illinois has been extensively worked. The largest deposits in the world are in the Western States, and that ore is there found associated with limestone, blende, carbonate and sulphate of lead, pyrites, and often an ore of copper and cobalt.

The lead region of Wisconsin comprises sixty-two townships, eight in Iowa, ten in Illinois, being eighty seven miles in diameter, from east to west, and fifty four miles from north to south. Throughout this region there is scarcely a square mile in which traces of lead may not be found. From a single spot not exceeding fifty yards square, three million pounds of ore have been raised, and in one of the townships two men have raised 16,000 pounds in a day. The mines of the upper Mississippi afford about 760,000 pigs annually, and those of Missouri about 150,000 pigs.

In 1874 the production of lead in California more than doubled, while in the same year that of England *decreased* 17,000 tons.

For making white lead Eastern corroders prefer the Missouri lead to any other.

To give the reader some idea of the production of lead in the United States, the following statistics for the year 1874 have been compiled:

	Tons.		Tons.
Missouri	15,000	Chicago	2,200
California	8,000		
Philadelphia			46,550
New York	6,500		
Newark			
Iowa		Imported	18,000
Illinois	5,500	U. S. Sales	4,900
Wisconsin			
Omaha	5,800		68,500
Salt Lake	3,500		

In 1874 the Union Pacific Railroad carried East 3500 tons refined lead and 15,000 tons bullion, by which is meant lead carrying more or less of the precious metals.

Roman Kitchen Utensils.—A paragaph in the *Journal de Geneve* mentions the acquisition by the museum of that town of a set of Roman kitchen utensils found in a field near Martigny, having probably been buried on account of some sudden alarm. There are 30 articles, mostly in bronze, some of them elaborately worked, reminding one of the beautiful shape and ornamentation of Pompeian vessels. The shovel and pot-hanger do not differ much from modern articles, and there is an earthen mold shaped like a shell, several plates in various sizes, a saucepan with the bottom worn away, a large boiler, a funnel, two ladles, a stew pan, and vases, or ewers, with two gladiators, and apparently awarded as a prize. There are also two silver ornaments, seemingly of later date, and believed by Dr. Gosse, the curator, to have been used in Christian worship. He attributes the find to the third century. Three bronze coins were discovered in the same spot, two of them bearing the effigy of Augustus and the third that of Antoninus.

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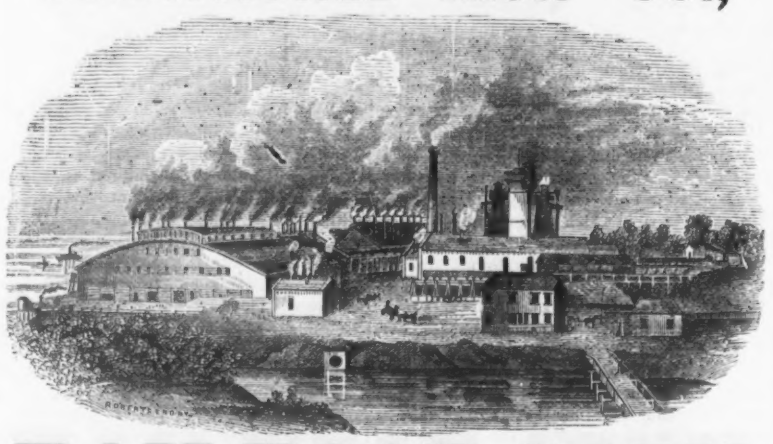

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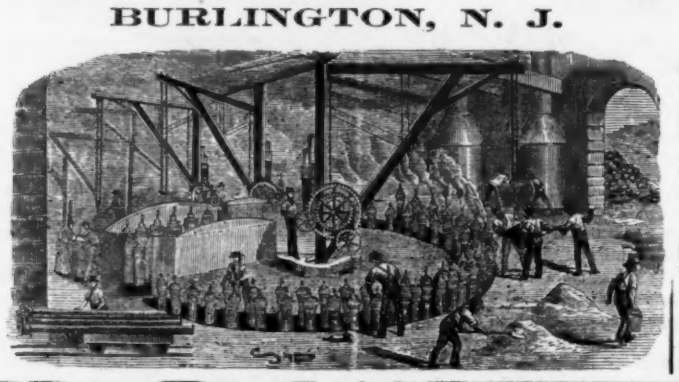

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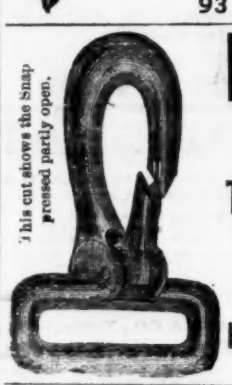

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A Pennsylvania iron master, writing to the Reading *Eagle*, says:

At this period of depression in the iron trade throughout the world, when Pennsylvania manufacturers find profits in trade reduced to so narrow a margin that it is almost, if not quite, impossible to compete with other localities, it is important that the situation should be investigated, and the remedy be ascertained.

In counting up items of costs in the manufacturing of pig iron, we find that the labor employed at the different hematite iron ore mines that surround this city has been reduced to 80 cents per day. The cost of labor that is connected with the different blast furnaces in this vicinity has also been reduced from time to time in about the same proportion as that of mining ore. So far as the cost of labor is concerned that is employed at the iron ore mines or furnaces in this section, we find that there is no room for any further reductions. These prices are now about the same as before the war. The high prices paid for coal, ore and transportation are the items that are swelling up the cost of iron. They have remained up in price the same as during the rebellion, when iron brought from 100 to 300 per cent. more than it does now. Nearly all the furnaces in Eastern Pennsylvania, the great iron manufacturing district of this country, have been dependent on anthracite coal. These coal fields have within the last few years been controlled by several large corporations, composed principally of English capitalists, who have united on fixed prices for their coal, which are at variance with those of iron, labor, &c.

The principal railroads leading to the anthracite coal fields are also controlled by English capitalists, who have no sympathy with the iron industry of this country. Coal is carried from the Allegheny coal fields at one-third the rates that are charged by the leading lines in Eastern Pennsylvania. Some of the principal iron ore mines in Eastern Pennsylvania are also controlled by wealthy capitalists, who are at this period of extraordinary depression in the iron trade receiving a profit of at least 800 per cent. over the cost of mining the ore.

In making a comparison of actual values of coal and iron ores, nature saw fit to place here very sparingly, compared with localities in Virginia, West Virginia, &c., which are within easy reach of transportation to the iron industry of Eastern Pennsylvania. There are no foundations to warrant the views taken by those who have control of the anthracite coal fields. Some of the principal iron mines and railroads are apparently all combined to hem up an industry which has cost at least $100,000,000 to establish,

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Since the accident in which the two companions of M. Tissandier lost their lives, thirty-seven proposals offering to solve the problem of maintaining life in the higher regions of the air, have been received by the French Society for the Promotion of Aerial Navigation, but of these only M. Trouve's has been considered likely to succeed. His system, which is minutely described by *Galignani's Messenger*, possesses the double merit of averting asphyxia and apoplexy: "The car of the new balloon is to be provided with a reservoir of compressed air sufficient to maintain the life of one man without discomfort for several hours. Its capacity will be a cubic meter, and the air will be compressed into it to the extent of five atmospheres. Now since a cubic meter of air weighs nearly thirteen kilogrammes, the contents of the reservoir will alone weigh about sixty-five kilogrammes; however, the whole apparatus with its contents and accessories is not to exceed 100 kilogrammes. As soon as the balloon attains a hight at which breathing becomes difficult, the æronaut will put on a sort of India rubber diver's dress, provided with an air-tight mask for the face. This mask has two tubes, which he inserts between his teeth; one of them has a valve opening inward for the supply of pure air from the reservoir; the other has a valve opening outward for the expulsion of the vitiated air. This constitutes the breathing apparatus. To avoid undue pressure, air from the reservoir is introduced into the diver's dress, which is composed of double India rubber stuff. The projector is so sure of success that he proposes to enter the iron chamber of the Sorbonne, where a vacuum can be produced, and there, provided with his apparatus he promises to bear a rarefaction equivalent to an altitude of 15,000 meters, (nearly nine and a half miles.")

In a very able paper "On Modern Blasting Agents," recently read by Mr. Nobel before the Society of Arts, the author thus explains the reasoning which led to firing slow explosives by local detonation: "When a hammer strikes a very thin layer of nitro-glycerine on an anvil the blow produces a strong compression of the liquid, which liberates heat and raises its temperature to the point at which it detonates. But only that part which actually receives the blow explodes. If, however, the hammer is very heavy, and the blow strong, the explosion is no longer confined to the part which receives the direct shock, and the whole goes off. A local detonation, owing to the immense tension of its gas, must be very similar in action to a strong blow, and will thus compress the explosive liquid which surrounds it causing it to detonate at will and to propagate the explosion throughout the whole mass by the same means. Whether that theory be correct or not, it led to a result which affords considerable facilities for the utilization of modern explosives. It enables us, with or without confinement, to turn a solid or liquid substance of very harmless appearance instantaneously into gas, which occupies the same or nearly the same bulk, but has an expanding tendency which for nitro-glycerine gas must come near a pressure of 500 tons per square inch."

The Jackson Iron Company.

The Cleveland *Review* says:

The Jackson was the pioneer iron company in the Lake Superior district, having opened their mine at Negaunee in 1846, twenty-nine years ago. But little was done, however, for several years in the shipment of ore. Docks had to be built at Marquette, and a plank road from Marquette to the mine, a distance of 12 miles. Meanwhile the St. Mary's canal was completed, and in the season of 1856 regular shipments were commenced by sending to market 5000 tons of ore.

Since that time its success has been uninterrupted, and it is owing largely to the preserving effort and enterprise of this company that others followed, and the Marquette country has reached its present stage of magnificent development.

The company's property is very valuable, covering a large plant of hematite of the specular, granular and slate varieties, and large quantities of the soft red and brown oxides. These ores have always been regarded with particular favor for their remarkable purity and large per cent. of metallic iron. The mine is one of the most interesting in that country, if not in the world, and is worked in a most complete manner, and is capable of yielding from 50,000 to 100,000 tons of ore per annum, without trouble. The largest amount taken out in one season was 131,000 tons, in 1868. It is proposed the present season to mine but 50,000 tons. The total product of the mine, up to the end of last season, was 1,416,717 gross tons.

The company also operate two furnaces, located at Bay de Noc, Lake Superior, one of which went into blast in 1867, and the other in 1870. These furnaces produced, up to the end of last year, 57,260 gross tons of pig iron, and rank next in the amount in their product to the most productive one of the entire group in the district.

New Electric Clock.—Mr. R. S. Symington, telegraph engineer to the Scottish Telegraph Construction Company, Glasgow, has just applied to the Clydesdale bank an electro-magnetic clock, understood to be the invention of Prof. Wheatstone, but the principle of which was first announced by Prof. Faraday. This ingenious and interesting piece of mechanism, although not indicating "the time of day" by any index of its own, is so arranged as to control the movements of any number of connected clocks by means of magnetic currents. Faraday's principle was that of introducing a magnet into the aperture of a hollow coil, and thus creating a current which may be repeated as often as the magnet is removed to and from the coil. In the machinery at the Clydesdale bank a ponderous weight supplies the original motive power. This weight acts upon a pendulum working between two piles of magnets by cog wheels, a current of electricity being drawn from each set in turn. By the agency of spiral wires this current is conducted to sixteen clocks, placed in different parts of the premises. These clocks vary in size and appearance from the two leading 24 inch dials in the vestibule to the ormulu timepiece in the bank parlor. In a miniature coil connected with the central magnetic pile is a needle, which is forced to revolve by alternate currents just as the needle of a compass would do were the same influence brought to bear upon it. This needle guides and controls miniature wheels, the pivot rods of which are extended to the front of the dial where the hands are joined on in the ordinary way. Of course, it is absolutely necessary to maintain the accuracy of the central machine, and this is obtained by establishing electrical communication between the pendulum at the bank and the Observatory clock at Dowanhill. Should the machinery in the bank move too fast it may be regulated every two hours by an electric current freeing a lever which has the effect of stopping the machinery during the space of time it may be in advance. Accurate timekeeping is thus maintained in the central and dependent machinery.

The Copper Cent.—As the old "red cent" has now passed out of use, and, except rarely, out of sight, like the "old oaken bucket," its history is a matter of sufficient interest for preservation. The cent was first proposed by Robert Morris, the great financier of the Revolution, and was named by Jefferson two years after. It began to make its appearance from the mint in 1792. It bore the head of Washington on one side, and thirteen links on the other. The French Revolution soon created a rage for French ideas in America, which put on the cent, instead of the head of Washington, the head of the Goddess of Liberty—a French liberty, with neck thrust forward and flowing locks. The chain on the reverse side was displaced by the olive wreath of peace, but the French liberty was short lived, and so was her portrait on our cent. The next head or figure that succeeded this—the staid, classic dame with a fillet around her hair—came into fashion about 30 or 40 years ago, and her finely chiselled Grecian features have been but slightly altered by the lapse of time.

Rapid Process for the Detection of Lead in the Tin Lining of Vessels.—M. Fordos gives the following description of a method of detecting lead in tin: Place, with a tube plunged in pure nitric acid, a slight layer of acid upon any part of the tinning, selecting by preference the thickest parts. Both metals are attacked, forming stannic oxide and nitrate of lead. After a few minutes heat slightly to expel the last traces of acid, and allow to cool; then touch the pulverulent spot produced by the acid with a tube dipped in a solution of 5 parts of iodide of potassium in 100 of water. The iodide has no action upon the oxide of tin, but with the nitrate of lead it reacts, forming a yellow iodide of lead, and showing the presence of even a small quantity of this metal. The surface of the tinning must be carefully cleansed before applying the nitric acid, and the acid should not penetrate to the iron or copper which forms the body of the vessel, as the reaction would then be complicated.

BUSINESS ITEMS.

PENNSYLVANIA.

The Valentine Iron Company, of Bellefonte, are at the present time enlarging their works, building a new furnace, and putting in several new boilers, and repairing them in general. They have more orders on hand now than they can possible fill for some time to come. It was impossible to get along without enlarging, as the demand upon the works had become so great.

Although it is only a little over two months since the axe and hoe factory at Beaver Falls, Pittsburgh, were burned, new building have been erected and the works put in operation again.

W. D. Wood & Co. have doubled their capacity for the production of Russia and patent planished sheet iron, at their mills in McKeesport.

The Hazard Manufacturing Company have lately built a wheel-house, and are now constructing a water-wheel which will be 40 feet in diameter, and 6 feet 3 in. in width, of which Mr. H. Deppe, of Milliport, is the builder. The wheel will be provided with an iron shaft and iron spiders.

The rolling mill of the Blandon Iron Company, at Blandon, has resumed work, having been idle since February last, owning to a strike of the puddlers. The puddlers now employed are new men, and the strikers endeavored to drive them off by force, but were dispersed by the authorities.

The Keystone Bridge Company has just completed the draw of the bridge over the Raritan, on the New York and Long Branch Road. It is 472 feet long and has two clear openings of 200 feet each. The draw is worked by two steam engines of 8x12 inch cylinders, and it takes about three minutes to swing it.

Thin sheets of iron (1-10,000th of an inch in thickness) are being rolled at Graff, Bennett & Co.'s, Pittsburgh, from iron puddled in their Danks machines.

The Pittsburgh Locomotive Works recently delivered two heavy 32-ton freight engines to the Indianapolis, Peru & Chicago road.

The La Belle Steel Works, Allegheny, to keep up with orders are now erecting two hammers—one of 1400 lbs. for steel tilting, the other for forging axles.

The machine shop of James Brown & Son, in Pittsburgh, was burned the 19th ult. The shops were six story brick buildings. Loss on stock and buildings, $65,000; insurance unknown.

A new coal machine, the invention of Dr. J. R. Hayes, "for pressing coal dust into fuel," has been put in operation at Harrisburg. "A ton of coal was made by it in six minutes." This is stated to be the first successful effort made in this country for the utilization of coal dust on a large scale; and the machine, which is described as "simple, cheap and universally practicable," will, it is hoped, "add millions of dollars to the coal wealth of Pennsylvania."

N. & A. Middleton, Philadelphia, are running their works night and day, having large orders for their Bessemer steel springs, beside orders for 68,000 wool-packing springs.

NEW JERSEY.

The Passaic Rolling Mills, at Paterson, are running double turn and employing 400 men. Beside bridge and shape iron for the Watson Manufacturing Company, the mills have been turning out some very large and heavy beams for the new Capitol building, at Albany, N. Y.

MASSACHUSETTS.

The Washburn & Moen Manufacturing Company have begun the erection of a new building at their works at Quinsigamond Village, near Worcester, 1000 feet long and 50 feet wide, of wood, in which they propose to begin the manufacture of charcoal steel wire and rods, a new industry for Worcester. They will put in four fires at the start, and add more after the establishment is in working order. A steam hammer, with a 2½ tons stroke is to be included in the machinery of the new works.

The Taunton Locomotive Works have contracted to build 12 large locomotives for the Union Pacific Railroad.

The Union Car Spring Company, who were burned out at Springfield, have resumed business in a modest way in the blacksmith shop of the Boston & Albany Railroad over the river.

Frank Chapman is rapidly completing the full equipment for his new cutlery works at Holyoke, and will get them in full running order in about two weeks, when he will employ some 50 men.

RHODE ISLAND.

Mr. John B. Anthony, president of the Providence Tool Company, has returned from his visit to Turkey, and with contracts for the Martini-Henry rifle sufficient to keep the works running for two years longer. He was received with great honors at the court of the Sultan, and decorated with the order of Osmanli.

CONNECTICUT.

The Seth Thomas Clock Company, of Thomaston, have the contract for the large town clock the gift of Mr. Henry Seybert, of Philadelphia, to that city for Independence Hall, to be completed by July 4th, 1876. The bell will weigh 13,000 pounds, for each of the thirteen original States. The total value of Mr. Seybert's gift is $20,000.

The Howe Sewing Machine Company, at Bridgeport, have begun the manufacture of the Manning Machine for use in making boots and shoes and other heavy work. The company recently purchased the right for $20,000, and expect to make this branch of their business an important one.

The Shear works in Naugatuck were burned the 18th inst. Loss $10,000; insurance, $5000.

A building 30x80 feet is being erected by the Coe Brass Company, at Walcottville, in which will be placed the machines used for stamping, cutting out cartridges, etc.

The Sharpe's Rifle Company, at Hartford, has definitely decided to move to Bridgeport.

INDIANA.

The Indianapolis Rolling Mill has contracted to make for the Jeffersonville, Madison and Indianapolis Road new iron rails sufficient to relay seventeen miles of track, the rails to be furnished as fast as the company needs them, between this and November 1.

The Ohio Falls Car Works, at Jeffersonville, have turned out two reclining chair parlor cars for the Indianapolis, Bloomington & Western Railroad.

MICHIGAN.

The Marquette City steam forge is running at present on an order for car axles from the Chicago & Northwestern Railroad Co. The proprietors are expecting orders that will keep them busy all summer.

MARYLAND.

Twenty thousand pounds of Ore Knob copper were recently sold to Henry McShane & Co., brass and bell founders, Baltimore. This was the first product of ingots of the Ore Knob Copper Company, located in the Allegheny Mountains of North Carolina.

NEW HAMPSHIRE.

The Exeter Foundry and Machine Company at a meeting of the stockholders, May 24, voted to increase its capital stock from $26,000 to $55,000, and to change its name to the Exeter Machine Works.

The main building of the Agricultural Works, in Lebanon, was burned the 11th ult., together with the valuable machinery and stock. The loss is $33,000, partially insured. One hundred and fifty workmen are thrown out of employment by the disaster, and they have lost all their tools.

Blood's Locomotive Works, at Manchester, will be run for the present only five days in a week. About 150 workmen are employed there now, which is less than one-fourth required to run the works at the full capacity.

The Goodell Company have shut down their cutlery works in Bennington, and commenced moving the stock and machinery to Antrim.

OHIO.

The galvanizing iron works of the Cleveland Boiler Plate Company are driven to their full capacity, with orders ahead. The boiler plate department has also of late been kept more than ordinarily busy. It is the intention of the company to commence the manufacture of steel plate within two weeks.

The Cleveland Scale Company have added to their premises a three story brick building 17x75 feet, to meet an increased demand for scale, safe, letter press and similar work.

The Canton Wrought Iron Bridge Company have now under contract over $160,000 worth of wrought iron bridge work. The work done in this establishment last year ran over $400,000. They are now building a railroad bridge in Iowa, also one at Saginaw, with 200 feet swing and 160 feet truss.

The Youngstown *Tribune* says, that Robert McCurdy, Esq., has sold his one-eighth interest in the Enterprise mill, at that place, to Messrs. James Cartwright, Chas. Cartwright, Samuel J. Atkins, and William H. McCurdy. Consideration, $50,000.

The Bellaire Nail Works have successfully introduced a self nail feeder. The striking feeders have concluded to go back to work.

Bolton, Meyers & Co., of Canton, are improving their steel works by enlargement and the construction of a Siemens-Martin furnace. A superior quality of crucible, tool and spring steel is made by this firm.

The Iron and Steel Company, of Ironton, have plenty of orders, and every department of the mill is running.

The Etna Iron Works, at Ironton, O., were organized in January, 1873, with a capital stock of $1,000,000, of which $250,000 embraced two charcoal furnaces and 20,000 acres of developed ore land. Notwithstanding the panic, and the fact that a large majority of the stockholders were in favor of suppression of operations, work was pushed steadily on, until the enterprise is now near completion. The work consists of a plant of self-coking furnaces, 87 feet 6 inches high, 27 feet 6 inches diameter of casing, and 18 feet 6 inches in diameter of boshes. Each furnace has four Whitwell hot blast stoves with a heating surface of over 50,000 square feet, the temperature of the blast to be sustained from 1400° to 1600°. The chimney is 195 feet high and 9 feet in the clear, this hight being necessary to create a draft for the thorough combustion or oxidization of gas in the stoves. There will be 12 cylindrical boilers in three batteries, each boiler 64 feet long. In the engine house, which is covered by iron water tanks, there will be five vertical engines. The steam hoist tower, which is built of iron columns, will be operated by two engines, each being separate and independent of the other. The stock house will contain bins having a capacity of 10,000 tons. In the stock house there will be constructed four calcining bins, each 40 feet high, with 35 feet boshes. As the ore comes from the company's mines, by its own narrow gauge road, the 6-ton cars will be hoisted and lowered by friction pulleys, and the ore dropped into the kilns. It is estimated that one ton of coal slack will calcine 30 tons of ore.

The Mirong (Mich.) Copper Mining Company is about to inaugurate operations on an extensive scale at Isle Royale. There are some sixty ancient pits on the company's property, and it is estimated that with the tools then in use it must have taken a hundred thousand men a hundred years to perform the work done by that ancient and unknown race. Certain it is that copper exists there in almost inexhaustible quantities, and no mine has yet been developed on one of these ancient sites which has not proved profitable.

GEORGE GUEUTAL & SON,

39 West 4th St., New York.

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Wood Screws, Steel in Sheets,

BAND SAWS, TOOLS FOR BRAZING, &c.

Bed Screws, Pin Hinges, and Wire Nails a Specialty.

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Saws of all kinds.

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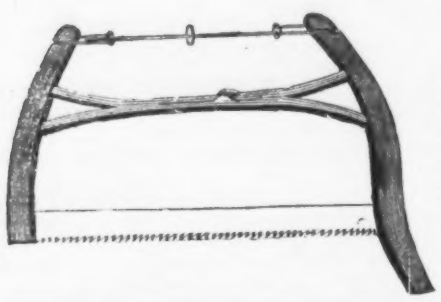

Elliptic Forked Saw Frame.

Patented June 28th, 1870.

The annexed engraving represents my ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any center bolt, secures for the Frame great strength and durability. These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

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VULCAN SAW WORKS,
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AMERICAN SAW CO.,

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Movable Toothed Circular Saws,

PERFORATED CROSS-CUT SAWS

And SOLID SAWS of all kinds. Trenton, N. J.

THE SILVER STEEL

DIAMOND CROSS-CUT SAW.

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PATENT HANDLES AND GAUGE INCLUDED.

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So confident are we that this is the best Cross-cut Saw in the market that we CHALLENGE THE WORLD. Orders promptly filled.

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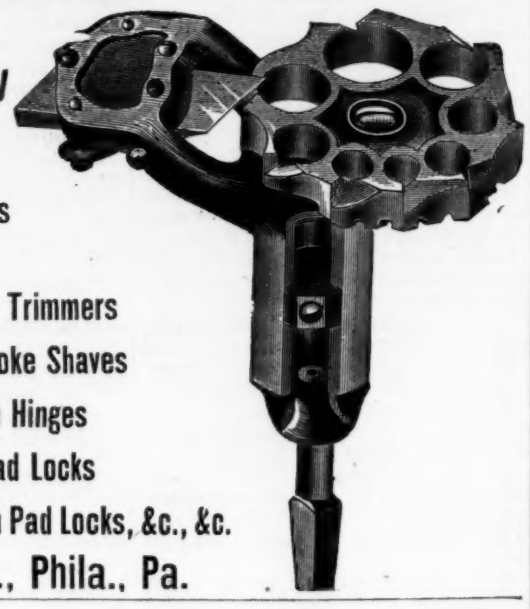

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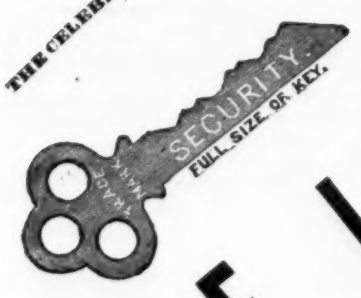

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Two Direct Cutting Edges, instead of one Scraping point.

Note extra steel and durability over the old **V**, outlined on **M** tooth.

Telegram Dated Oct. 1st, 1874.

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TO HENRY DISSTON & SONS:

Philadelphia, Pa.

I want you to publicly test that challenge on Cross Cut Saws. Name time and place within thirty days. American Institute preferred. E. M. BOYNTON.

E. M. Boynton gave on Wednesday of last week an exhibition of what his Lightning Saw could do at the Pennsylvania State Fair, in which two men sawed through a sound oak log, 16 inches in diameter, in 17 seconds. Mr. Boynton informs us that his export trade is increasing, he having lately made large shipments of his saws to Australia and other distant markets.—*The Iron Age*, Oct. 8, 1874.

For fuller report of this exhibition see the *Easton Morning Dispatch* of Oct. 1st, 1874.

Henry Disston & Sons cannot furnish Lightning Saws. Why do they imitate mine?

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Manufacturer of

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The best Hoe in market. It will not batter or break. Wears itself sharp. Will last twice as long as any other Hoe, and is warranted to cut the "Bolles Hoe" or any Hoe in market.

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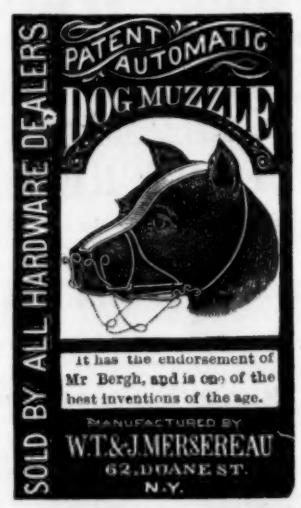

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Manufactured from

BEST NORWAY IRON,

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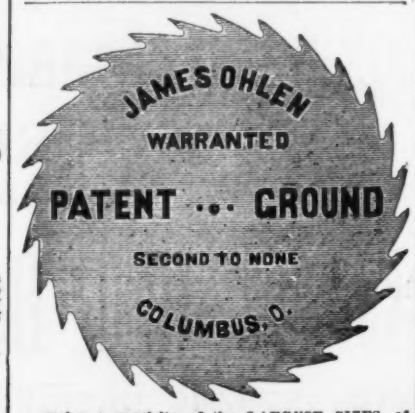
Middletown, Orange Co., N. Y.



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Evenness of Temper.—The peculiar structure of my furnace subjects all parts of the saw to a DEAD heat, and when dipped in the oil bath secures perfect uniformity.

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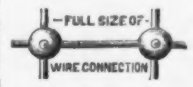

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PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, June 28, 1875.

Nothing more was wanted to squelch the small amount of business doing in this city than the terrible heat which has existed for the last half of the past week. With the thermometer at 100° in the shade, and from 15° to 20° higher in the sun, trade languishes, production must pause, and speculation ceases altogether. Still, the week presents its share of gossip, some of which is of interest. An additional impetus to the Centennial cause was given by the meeting and visit of the bankers of the country to the grounds, and the formation of a numismatic association for a proper display of the coins and currency of the country during the century. The bankers did more than this, though, they thoroughly inspected the grounds and buildings, they indorsed the action of the commission, and they pledged themselves to use their influence throughout the country to secure the funds still necessary for the completion of the work. This is the strongest and most solid influence yet brought to the aid of the cause, and will be of very great service in the end. Although the subject is noted daily, and almost *ad nauseam*, it is necessary for the interests of all that the progress of affairs shall be reported from time to time. In this progress, therefore, we have to chronicle a contract which has just been closed by the managers with a passenger railway company here, by which they are to construct and operate within the Exhibition grounds a double track narrow gauge railroad, which will traverse the entire circle between the various buildings, a distance of some three and a half miles. This road is to be equipped with five locomotives and forty palace cars, all of which are tendered the company free of cost by different locomotive and car builders of the country. While this will be a great accomodation in affording means of transit to visitors, it will also be a splendid advertisement to the shops furnishing the cars and engines. It is also a suggestion to numerous manufacturers of all sorts of conveniences and comforts to the public, to place them at the disposal of the commission to be used throughout the grounds, thus accommodating the visitors and benefiting themselves at the same time.

A very important railroad enterprise, and one which has included some very extraordinary engineering work, has been completed and opened during the past week, with less notice than it deserves. This is the extension of the Lehigh Valley Railroad, known as the Easton and Amboy Road, connecting the Lehigh Valley Road at Phillipsburg, on the Delaware, with tide water, and practically with ocean navigation, at Perth Amboy, N. J. The history of the construction of this road is remarkable, since it included not only that of one of the greatest engineering works of the day, the Musconetcong Tunnel, but that the entire road was built without the creation of any bonded debt whatever, the latter surely a feature which will commend itself in these days of slippery railroad finance. The road was begun in 1871, surveys being made by Mr. Robert H. Sayre, the chief engineer of the Lehigh Valley Company, and assistants. At Easton, the Pennsylvania terminus, is the bridge connecting the road with the Lehigh Valley R. R. track, and although still unfinished, is a splendid iron trellis bridge, 1200 feet long, crossing the Delaware River. Two miles from Phillipsburg is an iron viaduct 381 feet long, crossing the Morris and Essex Canal, at an elevation of 125 feet. Beyond this is the Springtown embankment, which is one of the greatest "fills" in railroad history. This stretches across a valley 1700 feet wide and is 127 feet high, requiring 550,000 cubic yards of filling. Through it is a double arch culvert of 13,000 cubic yards of masonry, 400 feet long, with arches of 34 feet span, admitting water courses and a roadway. Although more costly than a viaduct it is economical by reason of permanency. Another embankment of 400,000 cubic yards at Pine Hollow shows the magnitude of the work. Next on the line is the Musconetcong Tunnel, which, with the exception of the Hoosac, is the greatest engineering feat on the Atlantic slope. The opening of this tunnel was reported at the time, although it is really but just finished. It was begun April 19th, 1872, and work has been steadily driven since. Three times the working force was driven out by water, while the rock and other difficulties made it a greater job than the Hoosac Tunnel. Beyond the tunnel the road presents no especial features until the coal wharves of Perth Amboy are reached. These are models of construction, built on piles 30 feet above the ground; 1500 feet in length by 75 feet wide. On each side shutes give access to an extended system of tracks, all connected by the Lorenz switch, the invention of Mr. William Lorenz, the chief engineer of the Philadelphia and Reading Railroad, and now in use on most of the roads in the country. On these wharves 20,000 tons of coal can be handled daily, and two more of similar capacity are being finished. The road gives the Lehigh Company an outlet to the sea for their coal over their own track, and also gives railroad facilities to a very thriving region of country. As an engineering work it is extremely interesting, and as a new feeder for coal to New York and New England, highly important.

The commencement exercises of the University of Pensylvania, held during the week, bring out the interesting facts of the reception of that institution of bequests during the year equal to $1,100,000, exceeding those made to any other college in any one year, and also more than this has received in the whole one hundred and twenty years of its existence. Further, it announces the opening of the Towne Scientific School, under the charge of Professor Lesley, as Dean. This department will commence September 15, 1875, and the course of study will include chemistry and metallurgy, geology, civil and dynamic engineering, physics and architecture. The synopsis shows that this curriculum is to be very thorough, and especially so in analytical chemistry and metallurgy, in the latter of which is included the construction and management of blast furnaces and engines. The bequest of the founder of this school enables the faculty of the University to supply the only department hitherto wanting in the course, and which was especially needed in this city. A curious movement is announced from the Granger's headquarters at Washington, which is an arrangement to create a system of international exchange between the Co-operative Societies of Great Britain and the Patrons of Husbandry here. The movement originates abroad with the Central Co-operative Board of Great Britain, which states the object to be to "reform abuses, get rid of middlemen, restore commercial integrity, equalize wealth, etc.," It represents that much greater quantities of American products would be sold in England but for extravagant charges of middlemen, and that the same is true of manufactured articles sent to America from England. The plan of co-operation proposes direct trade in their own ships freighted with English goods to exchange for the grain and cotton of the Granger on equitable terms. There are 500,000 members of the co-operative societies of Great Britain, and 2,000,000 Grangers in the United States, hence we may argue that 2,500,000 people, if this movement was practicable, would expect to do the entire business of the English speaking people of the two countries, which, although highly euphimistic on their part, is "a trifle gauzy" to practical people. Once more we have a machine to make pressed fuel from coal dust, said to be practical, the invention of Dr. Hayes, of Harrisburg, and tested first this week. By it "a ton of coal was made in six minutes, and as it is simple, cheap and universally practicable, it will add, it is hoped, millions of dollars to the coal wealth of Pennsylvania;" when I know more of it I will report. The Southwark Iron Works of Henry G. Morris, lately bankrupt, was to have been sold at auction, including tools, plant etc., this week, but the sale was postponed under injunction granted mortgagees.

The Pennsylvania Railroad Company has just placed on the track a locomotive capable of drawing 100 loaded cars in train, and seven tons heavier than the Modoc, whose power is double that of an ordinary engine. Although severe on the road-bed, the use of steel rails and first-class construction admits the adoption of such mammoth engines, which are economical in reducing cost of traffic.

Metallurgy in Japan.

In a thesis prepared by a Japanese student, just graduated at Rutgers College, we find the following: Iron ores are very abundant in the Japanese Islands. The chief ores of Japanese iron industry are magnetic iron ore, specular iron ore and brown hematite. The first is found in two varieties, one of iron-gray color and the other black. Masses of this ore in the state of magnetic polarity, generally called lodestones, are found in the eastern part of Nipon, Sendai and Nambu. They are very highly esteemed for the steel manufacture, for swords and compass needles. Japanese furnaces are small in size and simple in structure, although the principle is the same as that of the blast furnace used here and in Europe. The walls of the Japanese furnace are built with fire-proof clay, and sometimes with a few stones. The shape of the furnace is round at the bottom, having at one side an opening which is closed with a clay stopper. On the opposite side of the furnace wall, a little above the bottom, there are two openings through which a continuous stream of air is passed into the furnace by means of a Chinese bellows worked by men. Before the ores are put into the furnace they are piled up in heaps with coal and calcined, or roasted, so that the water, carbonic acid, and sulphur may be expelled. The Japanese do not know the theory of the puddling process used in the Western countries, but the principle is exactly the same. The cast iron mixed with some sand and some iron scales is melted, with charcoal heat in a furnace similar to that already described, and kept in this melted state for several days until the whole mass assumes a fluid appearance. The Japanese method of steel making is entirely different from those usually employed in Western countries. It is done in this way. They mix a certain quantity of pig iron, which contains too great a quantity of carbon, with a certain quantity of bar iron, which has too little carbon, and cover the mass with borax and smelt in a small crucible of fire-proof clay for more than a week. The borax is used to dissolve any impurities in the slag. When the metal is separated from the slag floating on the surface, it is taken out and hammered hard, and alternately cooled in water and oil for many times. After the steel has been cast in that method, it is cemented and tempered. The method of cementing consists in covering thickly the hammered steel with a liquid mixture of clay, loam, ashes and charcoal powder. When this layer is dried the whole is heated red-hot and then cooled very slowly in warm water. The steel is now ground on a whetstone. The steel thus made is not very elastic, but is very hard. The explanation is that either the Japanese do not understand the tempering process, or they are unable to remove entirely the impurities from the steel. I have often heard Japanese blacksmiths say that watch springs can never be made in Japan, for Japanese steel is not elastic. The Japanese take great care and time in steel manufacture for swords. For instance, for ordinary knives forging and cooling are to be done only four times, but for swords fifteen times. Copper is and will be the most important metal of Japan. It is found in almost every province. For roasting they have a loamy furnace covered with a shed, provided near the bottom with several openings for the draft of the air. Five alternate layers of ore and wood are placed in the furnace and burned.

The Canton (O.) Wrought Iron Bridge Company have now under contract over $160,000 worth of wrought iron bridge work. The work done in this establishment last year ran over $400,000. They are now building a railroad bridge in Iowa, also one at Saginaw with 200 feet swing and 160 feet truss; span to be on wrought cylinder piers, no cast iron being used in railroad bridges. This company have bridges in twenty-five different States, the aggregate length of which will measure 28 miles. Their shops are conveniently situated on the line of Pittsburgh, Fort Wayne and Chicago Railroad, with every facility for rapidly turning out and shipping bridge work, the capacity being 150 feet per day.

The London *Times* of the 7th inst. says that large quantities of mowing machines and other implements, nuts, bolts etc., from the United States, are being sold in Birmingham at prices considerably under those of corresponding goods of English make, and that even Spain is now successfully competing with Staffordshire hinge makers in their own district. Belgium, also, is sending England railway spikes, iron foundry dog chains, etc., and excellent Prussian wire is offered at from ten to twenty per cent. under Staffordshire and Lancashire prices

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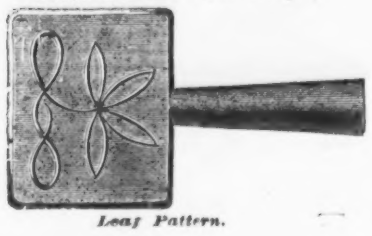
Patent Embossed Steps.



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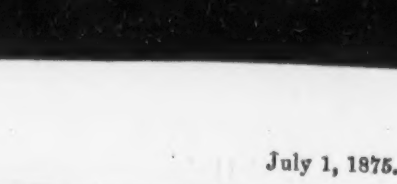

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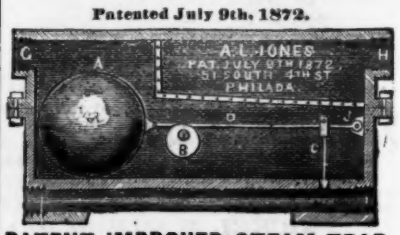

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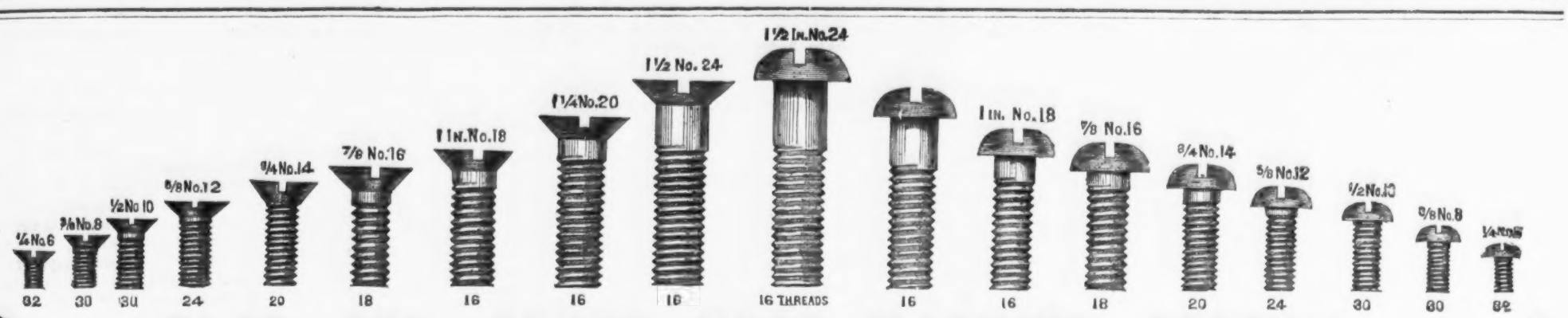

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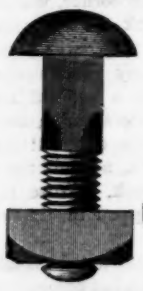

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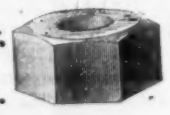

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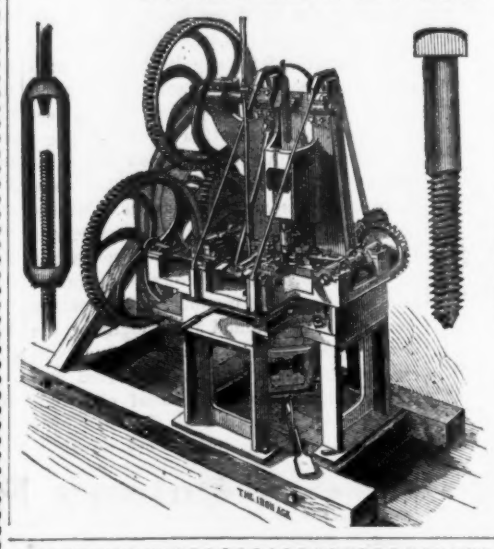

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New York, Thursday, July 1, 1875.

DAVID WILLIAMS - *Publisher and Proprietor.*
JAMES C. BAYLES - *Editor.*
JOHN S. KING - - *Business Manager.*

NEW YORK, January 2, 1875.

Until the 1st instant the postage on newspapers was paid by subscribers at the office where the paper was received, the yearly rates on the different editions of *The Iron Age* being as follows: Weekly, 40 cents; Semi-Monthly, 40 cents; Monthly, 24 cents.

Under the provisions of the new postal law, which went into effect on the 1st instant, prepayment at the office of mailing is required, at the rate of two cents per pound for the Weekly, and three cents per pound for the Semi-Monthly and Monthly, which will make the postage as follows on the different editions: Weekly, 50 cents; Semi-Monthly, 30 cents; Monthly, 15 cents.

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CONTENTS.

American Iron for Export.

"Merchants are selling American Iron "at Wolverhampton at $35 per ton." So says an Associated Press dispatch under date of June 24th. The item will probably surprise a great many of our readers, especially those who have doubted the practicability of exporting pig iron from this country to foreign markets. Of course, all interested are aware that the American iron which merchants are selling at Wolverhampton is charcoal pig iron, and that the price named leaves a fair but small margin of profit. Nevertheless, such a telegram at any time within the past three years previous to 1875 would have excited in the minds of the public a degree of astonishment which will not now be the case, because of the general knowledge of the people that our imports from Great Britain of raw irons have almost ceased, and that we can supply certain grades of the same material to that country on better terms than can be obtained elsewhere. The inception of our iron shipments to England has been the source of so much discussion as to need no repetition here. Like all new ventures on a foreign market, our charcoal iron shipments were regarded with distrust and doubt as to the quality of the metal, and the usual uncertainty arising from disbelief that the United States could possibly furnish a quantity of charcoal iron capable of competing with Swedish irons in purity. The facts are, that until very recently, notably until after the establishment of the British Iron and Steel Institute, the English iron master was in profound ignorance not only of the American iron trade, but particularly of the production of charcoal irons with us, and the quality of the metal made. The history of the reception of the first shipments made this season, as given us from private letters from parties conversant with the matter, is as follows: The first lots were disposed of with difficulty, as was perfectly natural, in ten ton samples as "flyers," to use brokers' parlance. The first, or nearly so, if we remember aright, went to an agricultural machine works for admixture. This order was supplemented by others for more of the same iron, and the Liverpool brokers and iron merchants were besieged with correspondence as to quality, price, etc., of the new iron. Subsequent shipments resulted in a better reception, and the uses of American iron possessing good chilling properties was to a certain extent adopted for certain castings, while some of it found its way to the crucible steel works. So far as we are informed no attempt has yet been made in any instance to adopt our iron for car wheels, nor, despite the recommendation of numerous influential journals, is there any progress toward the introduction of the American form of chilled iron car wheel. Should, indeed, such occur, it is more than probable that the experience of the American wheel founders will be taken advantage of, and the finished product imported from the United States at better prices than the wheels could be made in England from American pig. Hence we may not look for any immediate market for charcoal irons in England for wheel purposes. The question of profit, however, has been tolerably well settled in that equally as good prices are obtainable in Great Britain for our Southern charcoal irons as in the home markets, and the probability of a fairly active demand steadily increasing as the merits of the metal become known. Such is the condition of the present charcoal iron trade with England. In various articles, published from time to time previously, we endeavored to contribute to this precise result, and in so doing accomplished what has not hitherto been done, viz., to obtain reliable information as to actual costs of production in the South and Southwest. From the very interesting, graphic and statistical correspondence furnished us on "Charcoal Iron Making in the South," which have been running through our columns for a series of weeks, it appears clearly that charcoal and coke irons are made in that section of the country which, providing the ores are of sufficient purity to insure good quality, can be shipped abroad at a profit unless some extreme advance of freights should take place. The latter is unlikely to affect Southern ports, however, as pig metal can always be supplied under cotton cargoes at low rates. The policy of extending this trade is clearly manifest, as it gives an outlet to a large proportion of our product which would at present otherwise be uncalled for, and also furnishes a substitute for grain exports, which would produce smaller returns or never be made at all.

Whether our export trade will be limited to charcoal irons, or whether we can expect to build up a trade in other grades of pig metal after the wedge is once entered and a trade fairly established with foreign markets, we cannot now predict. We can no doubt make iron which could be used with advantage and profit in European foundries and mills, but whether we can export them or not depends upon the cost of making them in this country. That the present is an inauspicious time to attempt any such exportation is clearly evident, but with any improvement in the English iron market it is quite within the range of possibilities. Against ordinary pig irons the only possibility of competition would be in strength, and in this American irons are far ahead of English, so far, indeed, as not to be considered in the same category. American pig iron has stood a test of 20,600 lbs. to the square inch, as in the case of anthracite iron made by the Powhatan Iron Company, of Richmond, Virginia, while from 1600 to 2000 lbs. less may be considered an average of first-class coke or anthracite irons, charcoal ruling higher. We have not at hand tests of English iron, but from specimens of ship plates left here from repairs to Clyde built ships it is quite evident that the pig from which this had been made could never have approached in strength the figures given. If we can make our irons cheap enough we shall undoubtedly be able to sell them for special uses in foreign markets: if we cannot, it is idle to hope of exporting them, however good they may be.

The Lead Markets.

About six weeks ago the European lead markets, under the stimulus of a demand incident to the menace of war, experienced a sudden upward movement, while this market remained dull and stagnant, with little prospect of a speedy improvement.

Since then the relative position of the markets of both continents has undergone a radical change. In Europe, since the apprehensions of political complications have been allayed, the price has been steadily tending downward, while here more extensive purchases for *bona fide* consumption have followed closely upon a slack spring demand preparatory to an active fall trade. It will be remembered from former statistics of ours that the world's normal lead production sums up something like 300,000 tons, toward which England contributes 70,000; Spain, 67,000; Germany, 49,000; the United States, 46,500; Italy, 23,000; France, 17,000 (mostly from Spanish ores); while the remaining countries furnish 27,500. Thus, of the larger producers France turned out the least, and even this little was in the main derived from the neighboring Peninsula. Yet France has at all times been one of the largest consumers, and its dependence on other countries for a supply has been anything but a comfortable fact in the appreciation of the French people. The subject has engaged the attention of Frenchmen, and some long abandoned lead mines of Brittany of unusual richness are now to be made to yield some good returns. Mining operations near St. Brieuc were commenced by the ancients, who carried on their works on an extensive scale, though, of course, in a very imperfect manner. The works were partially resumed about eight or ten years since, when a steam engine was erected, the shafts and levels cleared and repaired, and about 60 tons of ore sold, some of which realized at Swansea over £37 per ton. The proprietors, however, became involved in the panic of 1866, the works were abandoned on the eve of success, and the mine allowed to fill with water. Some two years ago another attempt to re-open the mine was made, and some 60 tons of ore were raised and sold, which satisfied those concerned that the property was worth energetic development.

Other mines in the same locality seem no less important; the Bouexieres yielding 60 ounces of silver and 70 per cent. lead; the Plouvara, more recently discovered, ranging from 30 to 80 ounces silver and 40 to 70 per cent. lead; the La Ville Alhen, from 60 to 130 ounces silver and between 55 and 78 per cent. lead; the Rue Bourgee Mine, from 60 to 300 ounces silver and 50 per cent lead. At the La Ville Alhen mine operations were suspended during the revolution of 1790, after having been successfully carried on for about 25 years. Now that the French seem to bestow more energy than ever before on the development of domestic resources, and strikingly deficient as the country is in lead production, it is to be presumed that the resuscitation of this important industry will be taken in hand most vigorously, and that there will be no lack of capital to produce the desired results.

In Spain mining operations are in full blast in the rich province of Andalusia, and the output has been unusually ample since the commencement of the year. Prices have, in consequence, been gradually receding in the leading markets of Europe, and unless a decidedly favorable change takes place in the demand there for industrial purposes, which, at latest dates, remained slack, still lower figures may be reached on the other side.

In this country lead is in a much better position than it has been for a year past. During the summer of 1874 the government suddenly resolved to clear out its available supplies, at a time when we were yet suffering from the effects of the panic. The government surplus is now very nigh exhausted, and the sales of the Quartermasters' Department will no longer disturb the market. This year the spring business in lead has, it is true, also been a disappointment, causing prices to remain at a low range. But for the fall campaign a more flattering prospect opens, since it has been ascertained that the supply in the hands of both dealers and consumers has been allowed to run low. In order to at least partially meet these growing wants, a more extensive movement took place last week, and with it a more promising outlook seems to have been obtained. It will now remain to be seen to what extent the anticipated briskness in August will confirm the views entertained by these early purchasers, and on it will mainly depend the course of values until winter.

Car Building Practice.

In its external appearance the American passenger car gives very little indication of its structure, even to the most careful observer, unless he has some knowledge of the art of car building. Timber and framing are all carefully covered, and, with the exceptions of the truss plank inside and the truss rods beneath the body, there is nothing to indicate either weakness or strength. The chief strains to which a car body is subjected are those of "buffing," or blows in the direction of the length. These are so severe as to almost deserve to rank as collisions; yet they are unavoidable in modern railway practice. As these strains are not only the most severe, but the most frequent, and, at the same time, by far the most disastrous in their results, it is necessary that a well constructed car should have an abundance of strength to resist them. The resistance to buffing is furnished entirely by the floor framing. This framing consists of from six to eight timbers of hard or Southern pine, running from end to end of the car, and framed into two strong end-sills. These sills in ordinary work are from 8 inches upward in depth, and from 3½ to 6 inches wide—those outside being largest, the middle or center sills next, and the intermediate sills the smallest. The sizes vary considerably, according to the length and style of the car. The total area of the longitudinal timbers generally amounting to something more than 160 square inches. The end sills are very heavy hard pine timbers, as deep as the sills, firmly secured upon the ends of the longitudinal sills. Usually, when more than six sills are used, two are so placed as to form diagonal braces, giving the frame great power of resisting shocks or blows delivered upon the corners. The two center sills are placed quite near each other, and transmit from end to end any blow upon the end of the car. Near each end a heavy timber or iron truss, called a bolster, extends across beneath the floor frame, and is firmly secured to it. The under side of the floor frame is sheathed up, and upon the top are placed two layers of floor boards, usually at right angles. Some Master Car Builders add another floor, half way up between the timbers. These floors, solidly fastened to the timbers, give the whole mass of the framing great stiffness, while the whole is very light in proportion to its power of resistance. On the top of the side sills, and forming a base board in the finished car, is a heavy plank, usually about 12 inches deep and from 2½ to 3½ inches thick. This plank, set up on edge, is bolted down to the sill and secured to each post in the wall of the car by two heavy lag screws. These two planks, which commonly carry the inside ends of the seats in day cars, add very much to the strength and stiffness. In the wall of the car, below the window sills, a system of bracing similar to that employed in bridges, is used to aid in holding the body up. Beside this, there are from two to six truss rods used under the bottom of the car, to hold up the center of the body and prevent the ends from getting down. In the parts we have mentioned, we have the entire resisting power of a car. Its whole strength may be said to be below the window sill. Above this point the car is a mere protection from the weather and a shield to prevent injury in case the car turns over. From this it will be seen that the top of the car needs but little strength above that required for sustaining its own weight and maintaining its position. In our best cars the roof is treated as a simple covering, and carlins and ribs (timbers of the roof) are as light as can be safely used for driving nails into, while roof boards are but little heavier than is necessary to sustain a man walking over them. On some roads the roof boards are secured by screws, and the parts are made lighter in proportion. Between each pair of windows are two posts, rising from the sill and extending upward to the eaves of the car. These are almost universally of ash, preferably of the straightest and best that can be obtained. When examining a car in the frame, a person would be apt to exclaim against attempting to build it with such light timbers. It must be remembered, however, that after leaving the floor every ounce added to the weight of a car is so much taken from its strength, because above the floor nothing that we put in adds in any considerable degree to the stiffness or resisting power. In spite of these light timbers, our car when finished, can almost be compared to a well made cask, it is so strong and tough, and, aside from floor framing, so light. This object is obtained by the panels with which the body is covered. The panels themselves are whitewood boards from one-half to three quarters of an inch in thickness. In a few cases we have known even thinner panels to be used. The panels which are put on to the body with screws, are bedded in white lead so as to get a perfect bearing, and when the lead hardens it adds greatly to the stiffness of the structure. Another plan of putting on panels is to use glue and nails, in which case the inside of the panel is "canvassed," or covered with a sort of open mesh burlaps, or coarse canvass. This is cut out considerably larger than the panel, so that when in place the edge of the canvass turns up, and is glued to the posts and other parts of the framing against which the panel may come. It is put on after the panel is in place. When the glue is dry the whole inside work of the frame receives a good coat of paint. A panel put on in this fashion is exceedingly tough, so that it is almost impossible to break through it by any ordinary violence. A sledge hammer is almost powerless against even a three-eighth inch panel, unless in the hands of an experienced man. The hammer will rebound from the surface with great violence, and the panel does not yield until repeated blows have splintered the wood and entirely destroyed the grain. This elasticity gives the body a power of resistance not to be obtained in any other way. The whole body becomes a unit, since the wood breaks before the canvass can be separated from the panels or posts. Inside, the panel work adds great stiffness when properly put up, as it is in large sections glued together and strongly secured to the posts, sometimes by glue, but commonly by screws.

The roof, in addition to its wooden frame, has usually several braces of wood and iron combined ("compound carlins," an iron carlin between two of wood), which run across from one wall to the other. At the ends these carlins are tied to the side sills by rods running down between the windows. Other tie rods cross the car, while joint bolts, bands at the corners, straps over weak places, and rods wherever they are needed, make the whole structure so strong that no ordinary amount of battering cannot injure it, beyond taking off the paint and ornamental battens. Even these, when put on, as is the practice now, are hardly ever injured. They are thin strips of iron used to cover the joints between the panels, and are secured fast. Such a car, thrown from the track at thirty miles an hour, may be dragged a long distance along the ballast, may roll down a bank, or, as has often happened within our knowledge, be tossed off the track, landing on its roof beyond the railway fence in a field, and yet sustain no serious damage. Here we may remark that generally when people in such a car have the presence of mind to grasp the front edge of the seat and hold themselves firmly in their places, there is little danger of their getting hurt.

In mounting the body of a car upon its trucks, one point is of great importance, and that is the check chains. These are chains, usually one at each corner, which, while they allow the truck to turn sufficiently to pass any ordinary curves, will not allow it to turn at any considerable angle with the body. In a run off, the check chains, when properly secured, keep the trucks in line, and the car will not readily get across the track, nor will there be much danger of a wreck, because the train can generally be stopped in time to save it.

In comparing a car constructed on this system with a car of the kind commonly employed on English and Continental roads, it is obvious that the former has vastly the advantage in the matter of strength. When an American passenger car jumps the track, is tossed about and stood on its head—so to speak—the only injury to passengers, under ordinary circumstances, results from their being rolled about inside—stood on their heads, in fact. When a similar accident happens on an English road, panels, doors, running gear, sole plates, horn plates, roofs, broken glass and passengers are usually ground up together, and suffer about equal damage. On the 12th of last month the New York and Boston express train was thrown from the track by running over a horse at a crossing. Two sleeping cars were thrown from the track, and the first fell in a position at right angles to the rails. The other one turned over on its side tearing away a depot platform. The shock was terrific, but the damage done to the cars can be estimated from the fact that it was necessary to *break the windows with handspikes* in order to get the passengers out, none of whom were killed or very seriously hurt. An English car under such circumstances would have been broken into countless fragments, and those among the passengers who escaped alive would prob-

aby have been killed with excitement. As examples we refer to the Wigan and Shipton accidents.

Service Pipes.

The question of best material for service pipes is one of the most important that is met with in discussing the methods of plumbing; and it is becoming of greater and greater importance as the introduction of water works goes on. Almost every town in the country of any considerable size, has its water works, and, of necessity, the greater portion of dwellings and stores in them receive their supplies of water from the street mains. If health was in no way concerned, the matter would be a very simple one, for the lead pipe, taken all in all, would probably be the one universally preferred. Lead, from the facility with which it is bent and worked into shape, when cold, has been in all ages the favorite metal with plumbers. In fact, the name of the trade is derived from the Latin name for the metal, *plumbium*, and the plumbers were really lead workers.

With the exception of ease of working, however, lead would hardly have sufficient advantages to make one choose it as a material for a service pipe. Lead pipe is, under many circumstances, durable, easily handled and reasonably cheap; but it is weak and heavy, and is attacked by certain kinds of water, so that the pipe is quickly destroyed and the water flowing through it is poisoned. In other kinds of water it is harmless, exhibits a wonderful durability, and, except for its weakness, would be a very perfect pipe. But its very ductility is sometimes against it, because in long lines of straight pipe the metal is constantly stretched by the cold, and in warm weather the heat expands the metal and lays it up into waves or folds, as the case may be.

In the attempt to find something better than lead as a material for service pipes, block tin has been largely used, but with only moderate success. We use the term service pipe for convenience, to cover the whole service system for the distribution of water in a house. The tin melting at a comparatively low temperature (421° Fahr.) makes its use somewhat more difficult. It is harder than lead, yet, being less ductile, it does not work as well, and a job is not as easily executed with it as with lead. In some kinds of water the tin is rapidly corroded. Instances have come under our notice in which a pipe has been rendered useless in the course of a few years by having holes eaten through it. This was the ordinary block tin of commerce. Fortunately, the salts produced by the action of the water upon tin are not poisonous, and though the pipe may be destroyed, the health of those using the water is not thereby endangered. Tin, however, as a material by itself for service pipes, is hardly to be recommended, for, though it is safe, there are too many mechanical objections to it to make it a favorite with either plumbers or builders.

Tin-lined lead pipe has, within a few years, been very extensively used, and in many instances given great satisfaction. As now made, the interior coating is perfect, and if the joints are made as they should be, there is not the least trouble in regard to them. If, however, this pipe is worked in the same manner as lead, serious difficulties will be found. When well put up, there is little trouble. The lining is liable to be corroded by waters that attack block tin pipes. There is no trouble in making good joints by means of the tinned brass ferrule supplied by the manufacturers, but plumbers will not use them, preferring the solder joint, upon which they can overcharge without exciting suspicion. As the consequence, joints in tin-lined lead pipe are not, as the rule, well made.

Iron has been employed for service pipes in houses, with a good degree of success, but the danger of iron rust upon washed white fabrics, and the rapid decay of the pipe, makes it undesirable. The water coming through iron is not considered in any way injurious, even when a perceptible amount of the metal is present. The low price of drawn iron tubes, their great strength, and the ease with which they are put up, make them very desirable, provided they can be rendered durable by protection from rust. Galvanized iron pipes have been in the market many years, and of their utterly bad character for service pipes we have frequently spoken at length. In many cases the iron, imperfectly covered by zinc, is more rapidly eaten away than it would be if left entirely unprotected. In a great variety of waters used for the supply of towns, zinc is rapidly corroded, and the resulting zinc salts are highly poisonous. Many efforts have been directed toward tinning iron pipes, but serious obstacles in the way have prevented any successful application of tinning. The outside of the pipe could be very nicely coated, when desired, but on the inside exposed portions were sure to be left, or, the coating would be so thin as to allow the water to penetrate to the iron, and begin the work of corrosion when the thin film of tin would be displaced, and the iron beneath exposed. In this case the objection was a commercial one. The pipe was too rapidly destroyed to be used economically. Much has recently been said in regard to glass lined iron pipe, and, at first sight, the glass lining seems to be a very good thing, but there are several serious objections to its use. The glass is brittle, and in screwing the lengths home the twist of the pipe is likely to break the glass. Plumbers urge the difficulty and danger of handling iron pipe containing a brittle glass lining. They also state that the pipe cannot be conveniently cut to length, and hence is unsuitable for their work. There are certainly a great many chances against a common workman making a perfect job with a material of this character. We do not know how the glass would stand hot water, but we fear that it would soon be destroyed by unequal expansion. Theoretically, glass lined pipe is very good, but practically it is, we fear, utterly impracticable. Tar has been very successfully used for lining large cast iron pipes, and has been proposed for service pipes, but does not seem to have worked well in them.

The most promising thing that has come under our notice is the protection of an iron pipe by the insertion of a thin tin pipe inside of it. The tin pipe is drawn very thin, and of such a size that it can be pushed inside of the iron pipe. Hydraulic pressure is then applied to the inside of the tin pipe, which is expanded so as to firmly fit the inside of the iron pipe. The tin has a sufficient thickness to make the lining perfect. In cutting the pipe a drop of solder is run around the end to cover the iron. Tin and brass ferules are also made to go in the joints, so that when the end of a pipe is screwed into a coupling the iron is completely protected by the tin. The quarter turns and couplings are of iron tinned in the ordinary manner, and being of small size, there will be no difficulty in giving them a perfect coating. In protecting the end of a pipe that is to go into a coupling or quarter-turn, there are a variety of ways to be employed. We have cut pipe and left enough of the tin projecting to turn smoothly over the end of the pipe and cover it completely, which is better than the solder. In cutting the pipes it is best to use a special tool, and take a little care, but the time needed is no greater, if as great, as with the commoner tool. It has not yet been in service a sufficient time to enable us to give an opinion in regard to it, the first lot having been put up but two years since. It has stood this service well, and seems in good condition now. For convenience of putting up and in first cost there seems little to be desired. The matter is one of great interest and importance to our readers, and we shall watch its progress very carefully. From what we have seen and learned of it, we think it may be pronounced an important step in the direction of progress, giving us what we have never had before, a theoretically and practically perfect service pipe at a moderate price.

A respected correspondent writes to us as follows: "Can you not, in your paper, "impress the pig iron makers with the "necessity of blowing out their furnaces, "as the only remedy for an over produc-"tion." We are always glad to present such facts to our readers as will aid them in forming correct opinions as to the future of the iron market and the policy most profitable for them to follow. We cannot, however, undertake to impress them with the necessity for anything, except caution, good judgment and close economy. It may be assumed that the owner of a furnace knows better than any one else whether it is best for him to continue it in operation or to blow out. If he does not, it is not probable he would take any advice or be influenced by any arguments. The Iron and Steel Association made an effort last year to decrease production by an agreement among furnace owners, but it was found impossible to induce any considerable proportion of them to sign an agreement, and the attempt was abandoned. We do not wish to repeat the unsuccessful experiment; furthermore, we do not believe it is our duty at this time to advise the blowing out of any stacks which the owners can afford to keep at work. The effort to avoid loss will prove a constant incentive to close and intelligent economy, and under such conditions as those now affecting the trade, furnace managers will learn more about making cheap iron in six months than they would be likely to learn in six years of great and uninterrupted prosperity. We believe that many and important contributions are now making to the metallurgy of iron, and that when prosperity returns, bringing an increased consumptive demand for pig, we shall be in a better position to take advantage of it than ever before. There is no reason why iron should not be made in this country at an average cost below the average selling price of the past twenty years, and the experiences through which we are now passing are well calculated to teach us how to make iron cheaply and at the same time profitably.

Coal and Iron in the United States.

Notes of a Visit to Coal and Iron Mines and Iron Works in the United States.*

BY MR. I. L. BELL, F.R.S.

(Concluded.)

It is not needful to describe, at any great length, the line of conduct pursued by the proprietors of iron ore mines. In principle it was the same as that of the coal owners, but, in some instances, it was of aggravated intensity. In these, the means of supply were in very few hands, and, in one case, those who controlled it have preferred seeing furnace after furnace extinguished rather than bring the resources of their property to market at a reduced price.

To show the combined effect of the influence as just related on the cost of production, I will give the expense of making a ton of pig iron at three different periods, obtained from a source I regard as entirely trustworthy. The first series of figures is for 1860, when the iron market was very quiet; the second is for 1871, the year preceding the period of great excitement; and the third is what it rose to in 1873, when extravagant profits were realized, and at which it is, unfortunately for the furnace owner, continuing at, long after profits of any kind can be counted upon:

	1860. £ s. d.	1871. £ s. d.	1873. £ s. d.
Coal, ore and limestone	1 15 9½	2 19 8	3 17 7
Labor	0 6 6	0 9 9½	0 10 4
Stores and other expenses	0 5 6	0 8 6½	0 10 8
	£2 7 9½	£3 18 0	£4 18 7

I may add that these figures are entirely confirmed by the information I received all through the Northern States, viz., that within a dozen years, the cost of pig iron had doubled, and further, that it could not be sold at the present time without entailing a loss to the producer.

From the maker of an article entering so largely into human requirements as iron, I was anxious to turn to hear how the consumer regarded the network which had been woven about him and which appeared to me, of necessity, to cripple his action. I accordingly addressed myself to the largest consumers—viz., the directors of railways and locomotive engine builders, believing that they could have no wish to have the cost of their rails or boiler plates increased by the payment of a tax to the State.

In this expectation I was disappointed, both declaring that, in their opinion, high wages enabled the working classes to move more freely about, and thus added to the general prosperity of railway companies and engineers. Now, undoubtedly, so far as cutting coal and puddling iron are concerned, the system pursued has been singularly successful, the operatives in both these branches having been able to earn from 20/ to 30/ per day during the year 1873. But it cannot be pretended that every branch of labor has to be similarly paid. The railway director cannot desire to excavate his line, cut his sleepers, man his stations, and run his trains with wages based upon such a scale of pay.

Another advantage these protective duties were alleged as possessing was the contribution they afford to the revenue of the State; in other words, in the case of iron, that they who use most of this metal pay more than their share of the national expenses. This argument, however, is perhaps the weakest of all when it comes from the mouth of an iron master, because his object in asking for a high tariff is not to pour money into the national treasury, but to curtail this to its smallest amount by reducing the quantity of iron upon which the duties are levied to its lowest possible figure; in short, the iron manufacturer seeks to avoid foreign competition by excluding its importation entirely.

Leaving, however, the question as to whether an industry, having to contend with disadvantages peculiar to itself, is entitled to receive from the State any protection of the description just mentioned, let us briefly consider whether, in the case of the United States, this protection is in reality required in the manufacture of iron.

The supposed disadvantages in the case of the United States may be considered as arising either from dear labor or physical impediments connected with procuring or bringing together the raw materials, added to difficulties in sending the produce to market.

In *The Iron Age* of 22d October of last year, an ably conducted journal, dealing especially, as its name would indicate, with the metallurgy of iron, is an article entitled "Why England Suffers from Foreign Competition."

The chief reason why we suffer, according to this authority, is, that we are no longer able to command what the writer designates as "pauper labor," and this so-called pauper labor has caused British manufacturers to neglect keeping pace with the progress of the times, which neglect has led to our overlooking to afford any "encouragement to inventive talent to devise labor saving machinery."

If this language is intended for the British manufacturers of iron, its author must be but imperfectly acquainted with the real circumstances of the case, for, in his comparison, he draws a distinction between the Continent of Europe and our own island. When I say that the rates of wages are at the present moment, and in last October were, and always have been, much higher with us than in any iron making center on the Continent, I am merely stating a fact which has been remarked and commented on by every writer on the subject for the last 25 years. To the statement that "labor saving machinery" has been neglected, I have only to observe that the extent to which, in spite of higher wages, we reduce our expenses of manufacturing to the level of the cost of our neighbors, has been the subject of admiration to every Continental iron master who has visited our furnaces and mills. Indeed, and this, perhaps, will carry more weight with *The Iron Age* than French or German approbation, some of my American friends have considered it expedient to introduce in the most recently erected blast furnaces some admirable lessons they generously admitted they had learnt in England.

It is, however, a fact, and anti-free trade apostles would do well to remember it, that our commercial policy has had an effect upon the state of affairs with our immediate neighbors. Our large importations of food have conduced to a rise in its value abroad, and, as a result, wages there, from this as well as other causes, have, during recent years, been gradually advancing. In like manner, the great inducements which the American iron masters held out to emigration from this country have produced a sensible effect upon the cost of labor with us. Pig iron, at ten pounds a ton, no doubt affords an immense margin in this respect, but as soon as commerce is made fully sensible of this heavy load, the demand falls off, and the current of emigration is arrested—indeed, it may be said, is reversed, for a certain number of workingmen are returning from America to their native country.

Of course, it is possible, as it is proper, that the United States should enter into the market and bid against ourselves for labor; that they will do, without any regard for our "sufferings from foreign competition;" but that they should do this, and then require that their own people should submit to a heavy tax, in order that they might pay extravagant rates of wages, will be regarded by us, as it is by very many among themselves, as a piece of very questionable policy.

Admitting for a moment the expediency of encouraging the introduction of a new manufacture, or even of discouraging external competition by the levying of import duties, so as to place both on a position of equality, is the iron trade of the United States entitled to such a position? The mineral resources of that country are of unquestionable extent, but so are our own, and they will remain so for centuries to come. With labor on anything like equal terms, it is a physical impossibility that iron can be made more cheaply in the United States than it can in England. For this labor the iron makers there can and will bid with ourselves, but they may pursue this course to their own disadvantage. I would ask those who are disposed to deny the justice of this statement, to reconcile the position of the iron master there of a dozen years ago, who carried on, at all events, a moderately successful trade, with pigs at not much above half the price of the present day. Since that time the science of iron making has made considerable progress, and, notwithstanding, the cost of production has more than doubled, owing either to the immense increase in the price of labor, or to these artificial barriers to commercial progress to which allusion has already been made.

If my information as to former cost be correct, then I say that it is one against which no British maker at that time could compete, looking at the charge for freight he would have to meet before he laid down his ton of iron alongside that manufactured by the American iron master.

If the truth of these statements is conceded, the Lehigh furnace owners ought to be able, with their natural facilities, and with labor at some increase on its former cost, to meet us in New York upon more than equal terms, while those of the Cleveland, Pittsburgh, Hanging Rock, and other Western regions, can hold their ground successfully against us, by virtue of the land carriage which, in addition to that by sea, we must incur before we can deliver our iron at their doors.

So far I am taking no account of the comparatively undeveloped resources of Tennessee, Georgia and Alabama, which will, as I have already indicated, prove a match for any part of the world in the production of cheap iron, and this brings me to considering upon what principle a protective duty on the importation of iron into America has to be levied. Has it to be in amount sufficient to protect the puddler, who received, in 1860, 12/3 per ton for his work, or must it be raised so that he may continue in the receipt of nearly three times this price; or has it to be regulated by the inability of the furnace owner to meet competition with pig iron under £5 a ton, although he himself, a dozen years ago, could make it for 50/, there being nothing in the powers of supply of coal or ore to account for the change? We are not, indeed, compelled, for the purposes of this argument, to compare the present with former times, for there seems every reason for believing that pig iron can now be laid down in the Southern States mentioned above at little above one-half the cost of that made in the North. Has the consumer in Alabama or Tennessee to pay for his metal, made at 50/, £5 or £6 a ton, because the smelter elsewhere, owing, as I think, to artificial reasons, cannot afford to sell it without loss at a lower price.

Notwithstanding, however, the protestations in favor of the system of protective duty, there seems to dwell in the minds of its adherents a suspicion that the reverse may, after all, be more sound in principle. Whether I am correct in this supposition or not, our friends of the Western Hemisphere, if not admirers of our commercial freedom, are not unwilling to avail themselves of its advantages.

Annually the American Iron and Steel Association sends out a report, giving ample and very valuable information connected with the position of affairs affecting these trades. That for last year has just been issued, and it contains abundant proof of the ability and assiduity of the courteous secretary of that body, and marked by both these attributes is his advocacy of protection to the native industry of his own land. I gather, however, from his remarks, that our native industry may safely be left to take care of itself.

As we all know, there are several works in the West Riding of York employed chiefly in the manufacture of the finer kinds of wrought iron, particularly that used for railway carriage wheels. In America the material used for this purpose is cold blast charcoal pig iron, and a document, quoted by the American Iron Masters' secretary, congratulates the trade on the fact of 100 tons of this pig iron having been sent here in the hope of displacing the native make of our Yorkshire friends. Nay, so intent is the authority quoted in the "Report" to undertake every office connected with the introduction of "car wheel iron" into England, that he appears not to be willing to rest satisfied until the whole of these requirements of this commodity is conveyed to our shores in American vessels.

We will promise no impediment to the realization of these wishes. We use American oak, though we have heard of British, in constructing our railway carriages, because it suits our convenience. For the same reason, these carriages may run on wheels of American car wheel iron, if it is better than Yorkshire brands, and we have no intention of refusing either oak or iron, even if they are brought to us in vessels carrying the American flag.

Among the best signs of a nation's power and proficiency in manufacturing science and skill, is the position it is able to assume in exchanging those commodities, natural and otherwise, which circumstances have placed within its reach, for those in the production of which other countries possess superior advantages. It is, therefore, with very justifiable pleasure that the Secretary of the American Association calls attention to the increase of exports as exhibited by the custom house returns of the United States, and particularly by those in which iron and steel enter largely.

This gentleman, however, is too cute not to see that after asserting that the American iron-masters require for their very existence a high protective duty to be levied on British iron, there is a little inconsistency in their being able to export locomotive engines in competition with British manufacturers, and this inconsistency is rendered the more conspicuous when we are told that these very locomotives pass our shores on their way to St. Petersburg, the place of their destination. And how is this apparently unsurmountable difficulty accounted for? The high tariff of the United States gets the credit for it. High prices enable the American ironmasters and machine makers to pay high wages, which has so fostered the inventive genius of our relations across the water, that the economy with which they can construct machinery, and its excellence when constructed, render them able successfully to compete with the old country.

No one can deny the existence of great ingenuity on the part of the American mechanicians, and I deemed it simple justice to place their achievements as a worthy continuation of what had been effected in this country by their ancestors, and pursued since by their cousins.

Admitting, however, the truth of the language of the report, let us see where it lands us. A locomotive manufacturer, say in Philadelphia, receives into his establishment dearer iron and dearer steel than does a house, say, in Newcastle-on-Tyne. By dearer labor, but with greater skill, out of these he builds his engine, pays a higher freight, and undersells our Stephenson's and our Hawthorn's, in St. Petersburg.

I have described to you beds of coal and mountains of ore, as they exist in America, which the world itself may be challenged to beat. Are the iron consumers of that great country, not we, entitled to ask that a portion of that ingenuity which enables one of their locomotive engine builders, under considerable disadvantages, to compete with us, should be applied to the manufacture of iron? which manufacture commences under natural conditions, to say the least of them, equal to those possessed by ourselves.

We are further informed by the document I am considering, that no humane and patriotic American wishes his men to work for low wages. I cannot say that I gained, during my visit, any clear idea of what is meant in the abstract by low wages, but I can safely assert that in discussing the labor question in America, I could not detect any difference between the sentiments expressed by the ironmasters on the two sides of the Atlantic. That there is a limit even to the liberality of our American colleagues, I presume will not be denied, otherwise, how can we account for a nine months' strike among the puddlers at Pittsburgh, when it was proposed to reduce the price from 34/ to 30/ per ton, or for the presence of an armed force among the anthracite pits at Hazelton, to keep the miners quiet, who, in the matter of a proposed reduction of wages, do not seem to agree with what is just, not to say liberal, on the part of their employers.

The report condemns, to some extent, the adoption of improvements rendered necessary by the progress of the day. "As well ask," it continues, "the owner of a square piano to destroy it, because it is not a grand piano." Perhaps, so long as the musician plays for his own amusement, no one would find fault with his holding by his old fashioned instruments, but to compel an audience to pay and listen to inferior music, when better was to be had, would be an argument addressed to unwilling ears.

After all, however, the current which will compel the remodelling of iron works needs no foreign country to set it in motion in the United States. The enlarged furnaces erected in its different localities, and the admirable improvements effected by Holley and Fritz in rolling mills and Bessemer plant, will have their effect on those to whom circumstances render advance a matter of difficulty. It may be that "the policy which crushes the weak and exalts the strong" is not desired by the former, but it is an inevitable one in the history of industry.

In a political point of view no argument can be, as I believe none will be, advanced by the North against the development of the iron resources of the Southern States, and yet it is by no means impossible that some less favorably situated works in the former may suffer more by the competition which, before long, may spring up nearer home, than from any that we, in this country, are able to offer.

It is not, however, needed that we should seek, on our side of the Atlantic, for what to me seems sounder doctrine than that propounded by the Secretary of the American Iron and Steel Association, for these are the words of the president himself of that body in his last annual address, delivered on 11th of February of this year:

"Now is the opportunity to prepare for new efforts. Old processes must yield to better ones. Old machinery must be pulled down and better devices substituted. Intelligent economy must now be the order of the day, and our old method of puddling and rolling and heating must undergo a thorough examination and revision. If the Danks' furnace has not come up to what it promised, our inventive powers must be called into action to supply its defects or supplement it with something better. The Siemens and Ponsard heating furnaces, wherever used, have given better and more economical results than the old style of furnaces, &c."

The president then goes on to speak in commendation of breaking "down the barriers which have hitherto existed between the iron masters of the two countries of Great Britain and America," by which "each will learn to respect and emulate the other, and no doubt the advantage will be mutual."

The first of these sentiments will, I am sure, meet with a ready and warm response in the breast of every member of the Iron and Steel Institute of this empire, and I would offer my judgment, for as much as it may be worth, in assuring you of the entire truth of the second aspiration of my friend Mr. Reeves.

Plating with Aluminum.—According to John A. Jeancon, of Newport, Ky., metal surfaces may be plated with aluminum by the following process with great facility: Dissolve any desired quantity of a salt of aluminum, such as sulphate, muriate, nitrate, acetate, cyanide, etc., in distilled water, and concentrate the solution to 20° Beaume (at 50° Fahrenheit), in a suitable vessel to hold the article to be plated. The battery to be used should either be four pairs of Smee's zinco-platinum, of three of Bunsen's zinco-carbon, with the elements connected for intensity, and a plate of aluminum attached to the negative wire. The solution should be slightly acidulated with its appropriate acid, heated to 140° Fahrenheit, and kept at that temperature during the operation.

One of the great railroad companies of England purposes buying the Blaenavon Iron Works for the purpose of manufacturing rails and other iron.

A telegram has been sent from this city to London, and an answer received in 30 minutes actual time. Each message traveled 3600 miles, and passed through the hands of 18 persons.

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* Paper read before the Iron and Steel Institute.

Influence of Mining Industries on Civilization.

Prof. J. E. Clayton says: Before man learned to mine and work the metals, he had to depend upon the use of implements made of stone, wood, bone, and horn, for weapons of defense and offense against the wild beast of the forest, and neighboring hostile tribes. For long ages the early races of men knew nothing of metals. Stone hatchets, stone knives, and articles of bone and horn are found in abundance in the old drift deposits of Europe and America, but no traces of any metallic implements in the early haunts of primeval man.

The first stept in the advancement of the human race was made when native copper (and perhaps silver) was discovered, and came into use for weapons and domestic purposes. The tribes that first used copper were able to overpower their neighbors on account of the superiorty of their class of arms for destruction, and it is fair to presume that the localities from which copper was derived were guarded with jealous care to prevent their neighbors from supplying themselves with like materials.

The Aztecs and Peruvians carried the manufacture or bronze to great perfection; their chisels and other implements for cutting stone, are unsurpassed in hardness and durability by any metals of the present day.

The art of making copper tools, and giving them hardness equal to the finest steel, was known to them, but it has been lost in the destruction of those nations by the so called Christian Spaniards.

The civilization of the Montezumas and Incas was confined within the limits of the supply of copper and bronze. There was not enough of these metals obtained to allow their universal use by the masses, hence they remained in comparative ignorance and poverty.

The mechanical arts, so far as they could be developed by this limited supply, were confined to a class, and they, as usual in such cases, were under the control of the priests and rulers of their respective countries.

The nations of the Eastern continents had made much greater advances in the discoveries and uses of other metals than those of the Western. The art of reducing iron from its ores and working it into all kinds of shapes and forms for use gave a much wider field for the development of mechanical arts among the masses. Its great abundance and universal distribution, and the ease with which it could be wrought into useful forms, gave an impulse to mechanical industries, and manufactures which had been unknown to man before iron began to supplant copper, bronze, and brass implements. By a careful study of the early civilization of different races, in all parts of the world, we discover that such civilization was always limited by the supply of useful metals and their knowledge of working them into useful forms.

Those nations and races of men who have learned to mine and work useful metals have become powerful, have subdued their less fortunate neighbors, have collected the wealth of surrounding tribes, and made them tributary to their growth and power. The miners and metal workers in time became masters of the world, and in the higher sense they are masters of the world to-day. In brief, a careful reading of the history of civilization will show that those nations that learned to mine and work metals became civilized, wealthy, and powerful, while those races that never established mining industries and the manufacture of metallic articles have always been savages, and are savages to-day. The conclusion, therefore, is inevitable that mining, as an industry, is the oldest known to our race, and that it has been as it is now, the foundation of the whole structure of civilization, the chief element of progress, and basis upon which all other industries rest.

Extraordinary Specimen of American Sheet Iron.

There is now being shown in the Birmingham district an extraordinary specimen of iron-making in the United States. It is a portion of a sheet of very thin iron, so thin that though its surface dimensions are 4 in. by 3¼ in., yet its weight is only 3½ grs. apothecaries' weight. The breath of the nostrils will drive it away almost as if it were the cinder of burned paper. The thinness is itself very surprising, but the extraordinary part of the matter is that the iron has been made from what the Americans term a "muck bar," obtained from a Danks' puddling furnace at Pittsburgh without being reworked. Thus, an extreme thinness of iron, which it is almost impossible to secure from the very best materials, worked and reworked many times over in the usual way, has been got from the iron in the state of crudeness in which it was found upon leaving a mechanical puddling furnace. It is assumed in this country that the iron has been made from the ordinary district pigs, and the specimen is deemed to demonstrate the great value of machine puddling as practiced by the producers of the iron. And the specimen has an important commercial as well as a scientific significance. There is to the iron makers here the disagreeable inference that if crude iron can be worked to such foil as is described, then that sheets of greater thickness, but still of a thinness that brings them to the narrowest gauge embraced in the sheets generally made in this country, and which realize very high prices, should be produced by the United States iron masters at figures so much below those at which alone latens and button iron, for instance, can be made in this country, that the Americans must be in a position to successfully compete with the British iron master for those kinds even in his home market. Men in the trade who have seen the specimen are expressing the belief that the American should be able to compete with the English maker in the Antipodean-colonial, the Russian, and the Chinese markets, whither large consignments of British sheet-iron are constantly going.—(*London*) *Mining Journal.*

The Siren Fog Signal is described by Dr. Tyndall as beyond question the most powerful fog-signal which has hitherto been tried in England. The instrument is called a siren because the sound is produced by means of a disk, with twelve radial slits, being made to rotate in front of a fixed disk exactly similar. The moving disk revolves 2800 times a minute, and in each revolution there is, of course, 12 coincidences between the two disks; through the openings thus made steam or air at high pressure is allowed to pass, so that there are actually 12 times 2800 (or 33,600) puffs of steam or compressed air every minute. This causes a sound of very great power, which the cast iron trumpet, 20 feet in length, compresses to a certain extent; and the blast goes out as a sort of sound beam in the direction required. This siren was sent over to England by the American Light House Board, at the request of the Trinity Corporation, to be tried with other instruments in the recent experiments at South Foreland, and it has certainly beaten all the steam whistles, reed horns and guns that were tried with it. It was designed and manufactured by Mr. Brown, of Progress Works, New York. From a paper on the recent experiments to which we have referred, read on the 7th of May, by Vice Admiral Collinson, C. B., at the Royal United Service Institution, we learn that the Trinity House has already ordered a number of these instruments to be made with the view of establishing round the British coasts a complete chain of sound signals, to be used in foggy weather when light houses are of no avail. This siren can be heard in all sorts of weather at from two and a half to three miles, and in the Trinity House experiments was, on one favorable occasion, heard 16¾ miles at sea.

The extensive coal fields in the Island of Saghalien, which was recently ceded by Japan to Russia, are to be worked by Russian engineers and miners, and it is intended to employ a large number of the convicts from Siberia.

The construction of a gun weighing 100 tons has been begun by Sir William Armstrong, in England. This gun is to be a muzzle loader, 17 inch bore, and if successful will be the most powerful weapon ever constructed.

Naval armaments are still in a transition state. It is asserted in England that the moment an 81 ton gun is fairly afloat, in a ship built to carry it and use it, the fate of seagoing armor clad vessels of the present type is sealed.

The Valley Mill, at Youngstown, O., has an order for re-rolling 1000 tons of rails for the Atlantic and Great Western Railroad.

The Watson Bridge Works Burned.

On the morning of Tuesday the building of the Watson Manufacturing Works, at Paterson, New Jersey, was nearly destroyed by fire. The building in which the fire originated was of brick, 50x60 feet front, and four stories high, built in the most substantial manner. It had two three-story extensions, 44x120 feet, and 51x148 feet. The other buildings, being separated from these, were saved.

The fire broke out on the third floor, in the angle of one of the wings, a few minutes after the watchman had gone his rounds. Just before the fire, Charles Wildey, an employe, who was not on duty at the time, ascended by the elevator to the third story and remained there some time. He had no legitimate business there, and was not employed in that part of the works at any time. His strange action and previous bad reputation made him an immediate object of suspicion, and he was arrested. It required the utmost efforts of the police to prevent the workmen from lynching him. He has been suspected of arson before. He was locked up to await examination.

The Watson Manufactnring Company estimates its entire loss at from $130,000 to $140,000, including building, stock, and machinery. The total insurance was $120,000, distributed in a number of companies in sums of about $3000, of which about $70,000 is on the property destroyed. The works were run day and night with a force of 450 hands, about half of whom will be temporarily thrown out of employment.

The Watson Company has already made arrangements to rebuild the shops, and the work will be begun next week. The new buildings will only be two stories in hight. This is the second time the shops have been destroyed within two years. A large number of contracts were on hand, including the Portage bridge for the Erie Railway Company, a bridge for Fairmount Park, Philadelphia, a bridge for Newburyport, Mass., a contract for $40,000 worth of iron for the Equitable building in New York, the iron work for the Art Museum of New York, and the new sugar-house in Jersey City. The company does not anticipate any serious delay in completing these contracts, and believes that the Portage bridge will only be delayed two days beyond the contract time.

Iron Manufacture in California.

The San Francisco *Commercial Herald* says: Immense beds of iron, and generally of the most valuable kinds, exist at many points in California as well as in the adjacent State and Territories. The great obstacles to the production of that metal here have been the high prices of labor and the difficulty of obtaining a good fuel for smelting the ores; charcoal being too dear and none of the fossil coal yet found here answering well for that purpose. It is claimed that the Lincoln coal in Placer county, will serve this end, satisfactory trials having been made of it. If this really be the case, it is an important fact, as heavy beds of iron ore exist in the same neighborhood.

The consumption of iron on this coast is, for the population, enormous, almost the whole of it being imported. As charcoal produces a quality of iron greatly superior to the best of mineral coal, and we have timber in abundance for making it at most points where the ferruginous ores abound, the cost of that fuel will not be likely to delay much longer, efforts being made to commence the manufacture of iron at some of the more favorable localities in the State. Several enterprises of the kind are now talked of, and there is little doubt but some of them will soon take a practical shape, one having in fact already done so. A substantial company, composed mostly of New York capitalists, was formed last fall for the purpose of manufacturing this metal, the works to be located in the city of Sacramento, and run on ores obtained from Shasta county, the citizens of that place having contributed an eligible site for the smelting furnaces. The facility with which fuel can here be obtained, and the iron shipped to market, makes Sacramento a favorable locality for works of this kind.

Our annual importation of iron in its various forms ranges from 250 to 300,000 tons, bought at an average prime cost of more than $10,000,000; all of which, with the exception of about $50,000 paid for Oregon-made iron, goes out of the country. Through the growing demands for mining machinery, and the increasing use of this material in the construction of buildings, bridges, &c., the consumption of iron on this coast is being rapidly extended.

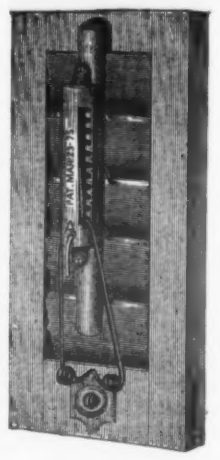
On every pound of imported iron we have to pay a tariff in the shape of freights and other charges equivalent to $15 or $20 per ton, a sum greatly in excess of what it would cost to make a first-class article of pig iron in this State. If we should do no more than supply the home demand for this description of iron, it would not only serve to retain vast sums of money in the State, but would give rise to new industries in the manufacture of stoves, castings for agricultural implements, hardware, &c., most of which, instead of importing for domestic use, we could supply to our immediate and more distant neighbors.

Being so strongly appealed to by considerations of economy, it is only reasonable to suppose that the extraordinary inducements existing here for the manufacture of iron will stimulate to greater diligence those already about to embark in the business, and lead to the early inauguration of many new enterprises of this kind.

In digging for coal at Wyandotte, Kansas, the workmen have struck a vein of gas which, in its escape, produces a roaring noise which may be heard a long distance. It is estimated that at least 250,000 cubic feet of inflammable gas escape from the aperture daily.

Jermain's Window Blind Slat Stop.

We illustrate herewith Jermain's Patent Window Blind Slat Stop, a very neat and effective contrivance for holding blind slats securely in



any desired position. They are made of brass, neatly finished, and are easily attached. J. Clark Wilson & Co., No. 81 Beekman street, are sole agents for these goods, which they offer to the trade at $1·50 per dozen, net; for large orders a concession from this figure would be made.

A French journal says that of the score of fire-proof compositions that have been brought forward within as many years past, there is scarcely one that possesses superior or even equal adaptation to the purpose, to the following: Dissolve, in cold water, as much pearlash as it is capable of holding in solution, and wash or daub with it all the boards, wainscoting, timber, etc.; then, diluting the same liquid with a little water, add to it such a portion of fine yellow clay as will make the mixture of the consistence of common paint, and then stir in a small quantity of paper hanger's flour paste to combine both the other substances. Give three coats of this mixture, and, when dry, apply the following composition: Put into a pot equal quantities of finely pulverized iron filings, brickdust and ashes, pour over them size or glue water, set the whole near a fire, and, when warm, stir them well together. With this liquid composition, or size, give one coat, and on its getting dry, give a second coat. It resists fire for five hours, and prevents the wood from ever bursting into flames; that is, it so resists the ravages of fire as, at most, only to be reduced to coals or embers, without spreading the conflagration by additional flames. It is found that a quantity equal to twenty pounds of finely sifted yellow clay, a pound and a half of flour for making paste, and one pound of pearlash is sufficient to prepare a square rood of deal boards.

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17th day of August

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WANTED.—A first-class business man familiar with machinery and manufacturing, capable of handling large bodies of men, desires a responsible position. References satisfactory. Address,

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Care of *P. O. Box 813, Bridgeport, Conn.*

DROP FORGINGS.

The TRENTON VISE & TOOL WORKS, Trenton, N. J., having increased their facilities, are now able to do all kinds of

Iron and Steel Drop Forgings

in quantities to order at reasonable rates.

HERMANN BOKER & CO, Proprietors, 101 & 103 Duane St., N. Y.

THE
McHaffie Direct Steel Castings Co.
STEEL CASTINGS,

Solid and Homogeneous, guaranteed to stand a Tensile Strain of 25 tons per square inch. An invaluable substitute for expensive **WROUGHT IRON FORGINGS** or for Iron Castings, where great strength is required. Office, **cor. Evelina and Levant Sts., PHILADELPHIA.**

Send for Circular and Price List.

Merchant Iron or Nails

Wanted in exchange for 300 tons No. 1 Wrought Scrap Iron.

GILCHRIST & GRIFFITH,
Mount Pleasant, Iowa.

A. PURVES & SON,
Corner South & Penn Streets, Phila.,
Dealers in
Scrap Iron & Metals, Machinery, Tools, Shafting & Pulleys, Steam Engines, Pumps & Boilers, Copper, Brass, Tin, Babbit Metals, Foundry Facings. Best Quality Ingot Brass.
Cash paid for allkinds of **Metals** and **Tools.**

For Sale, &c.

For Sale,

Several Second-Hand Railroad Locomotives, 4 ft. 8½ in. Gauge.

Address, Box 885, Pittsburgh, Pa.

Special Notices.

HARDWARE & LIGHT MACHINERY.

We are now prepared to manufacture under contract, specialities in Hardware and Light Machinery, in the very best manner, and at reasonable prices. We solicit correspondence with parties controling patents on articles which they wish made to order. Refinishing Hardware done promptly at low figures.

G. B. WALBRIDGE & CO.,
Proprietors Diamond Works,
99 Chambers St., N. Y.

WANTED.—A situation either as salesman or traveler, by a man who has had many years' experience in the general and carriage hardware business. Is an active working man, and can refer to first-class houses in the trade, based on an acquaintance of twenty years. Address, *HARDWARE, Box 658, Rochester, N. Y.*

TO INVENTORS AND MANUFACTURERS

The 44th Exhibition of the American Institute will open September 9th; Machinery will be received after August 15th, other goods after August 29th. For particulars address "General Superintendent, American Institute, New-York."

SITUATION WANTED,

By a German, who is a thorough practical ENGINEER and MACHINIST of twenty-three years' experience, fifteen of which he carried on a machine shop, having all the latest improved machinery, such as Steam Hammer, Boring and Planing Machines, Lathes, Bolt Works, &c.

He has full knowledge of fixing, driving and repairing Steam Engines and Boilers, &c.; also, is well acquainted in Iron and Steel Rolling Mills.

He is thirty-eight years of age.

For further particulars apply to

J. R. SCHNEIDER, Augusta, Ga.

For Sale.

Rolling Mill MACHINERY
For Sale.

The undersigned offer the following machinery For Sale:

One Upright Engine 14x14, single crank, (1) one ton fly wheel, governor, valves, and steam pipe complete.

One Upright Engine 18x20, for double crank, (8) eight ton fly wheel, governor, valves and steam pipe complete.

One Horizontal Engine 16x36, (15) fifteen ton fly wheel, governor, valves and steam pipe complete.

One Train, (18) eighteen in. rolls, with housings, bed plates, couplings, &c., complete; with one extra pair each of 18 inch springs and roughing rolls, and one bull head shears attached to train.

One Train, (10) ten in. rolls, (3 high, with bed plates, housings, couplings, &c., complete; with 2 sets extra (3) three high roughing rolls 30 in. long, 1 set extra 24 in. long, 1 set cutting rolls 24 in. long, and 18 rolls finished for all kinds mill works; cramp bars, roll plates, guide boxes and guides complete.

Two 13 in. Flue Boilers, 42 in. diam., 44 ft. long.

Two 18 in. Flue Boilers, 42 in. diam., 40 ft. long.

One 13 in. Flue Boiler, 42 in. diam., 30 ft. long, all with steam pipes and valves complete.

Also, One Horizontal Tubular Boiler, 42 in. diam., 7½ ft. long; 40, 3 in. tubes with engine, governor, valves, crank, steam pipe, and all fixtures complete.

One Wrought Iron Smoke Stack, 48 in. diam. by 75 ft. long.

One 3500 lb. Steam Hammer, made by Bement & Son.

One 1600 lb. Steam Hammer, made by Bement & Son.

One 600 lb Steam Hammer, made by Bement & Son.

One 400 lb. Steam Hammer, made by Bement & Doughty.

One Single Box Shears.

One Double Box Shears.

One Small Upright Shears.

One Large Ivison & Brooke Shears, made by the American Saw Co.

One 18 ft. and 4 small straightening plates.

One 22 in. Planer complete, and 2 Turning Lathes.

One each, No. 5 and 6 Double action Duplex Pumps.

One each, No. 2 and 3 Single action Duplex Pumps.

One Upright Power Duplex Pump, together with mill, furnace and smiths' tools, tongs, &c., floor plates, belting, shafting, pulleys, and steam pipe, molds, dies, &c., all in good order and ready for use.

☞ We are ready to receive offers for the whole lot or any part of same. For full particulars, inquire of, or address,

RICHARDSON, BOYNTON & CO.,
232 & 234 Water St., N. Y.

FINER CHANCE SELDOM OFFERS.

For Sale, the stock and fixtures of a Retail Hardware House, business successfully conducted since 1860. Located in a thriving town of 10,000 inhabitants. Stock embraces Builders' Hardware, Agricultural Tools and Machines, Stoves and Tinware. Tin Shop in connection. The senior partner having deceased, the surviving partner will sell the entire interest to engage in other pursuits.

Address, *BOWERS & JENKS,*
May 31, 1875. *Milford, Mass.,*

For Sale.

Car Shop in Conshohocken, Pa., 50x100 ft. fronting on P. and R. R. R., with blacksmith shop 20x30 ft., engine house 15x30, 25 horse engine, and all the modern machinery necessary. The lot is 135x300 ft. For particulars call on or address,

HUTCHINSON & FAGAN,
Norristown, Pa.

INDIANAPOLIS.
The Best Retail Hardware Stand

in the State of Indiana For Sale, **FOR 30 DAYS ONLY.** $30,000 capital required. Sales now running from $400 to $600 per day. The very best reasons given for wanting to sell, which have no relation with the business. Such an opportunity for safe and profitable investment is rarely ever offered.

R. S. DORSEY, Broker,
8 Bates Block.

SPECIAL NOTICE.

I have three patents for Dies, Machinery, and Tools for making Augers and Bits, each running seventeen years; dated as follows: Dec. 19, 1865; January 31, 1866, and July 3, 1866. **There is a special claim on each of the Dies.** All persons infringing on said patents will be held responsible to the extent of the law. **Russell Jennings.**

DEEP RIVER, Conn., Sept. 7, 1874.

DISCOUNT LISTS.

Iron Screws, Revised Lists, 13 Discouts, 75c. each.
Files & Bolts, { Bolts, Revised and Old Lists. } $1 each
{ Files, 3·50 to 8·50 to the £ steri. }
Address, with cash, (Copyrighted).
Dayton & Lamberson, 97 Chambers St., N. Y.

Charcoal Blast Furnaces.

Having during the past 10 years constructed and put in operation a number of the most successful Charcoal Blast Furnaces in the country, and having a competent corps of workman constantly in my employ, I am enabled to offer advantages in constructing or remodeling upon the latest and most approved plans.

Examinations of Furnace Property made and reported upon when solicited. Correspondence promptly attended to.

J. M. WHITE, Engineer,
22 W. Alexander St., Rochester, N. Y.

For Sale, &c.

Iron Ore & Mineral Lands,

Thirty thousand acres, abounding in the several varieties of Hematite and Magnetic ores, covered with timber; limestone abundant; contiguous to one of the largest Railroads leading east and west, low freights insured; coal within 20 miles of Works. Consists of Charcoal Furnace and Forge of 200 tons a month capacity; fine manager's house, large store, stables and workmen's houses, &c. Labor 75c. a day; cost of Charcoal, 5c. a bushel; iron ore, $1·75 a ton; lime stone, 80c., all delivered at Furnace. Freight to Pittsburgh, $3·50, Baltimore, $2·40. Ores can be placed in Pittsburgh almost beyond competition. For sale, or will be operated jointly.

Address, *P. O. Box 863, Baltimore, Md.*

For Sale!
Hardware Business

In a growing manufacturing town, one of the best locations in Vermont. Business well established and profitable. Stock about $10,000, in good order. This affords an excellent opportunity for a party with small capital to secure a paying business.

Address, **W. R. BIXBY & SON,**
Vergennes, Vt.

For Sale.

A first-class Hardware Business, located in the thriving city of Bloomington, Ills. Above business has been established for over twenty (20) years, and presents to any one desirous of doing an "A No. 1" retail and jobbing trade a most favorable opportunity. Amount of stock about $15,000. Will be sold at a sacrifice. Ample reasons given for selling. For further information, address,

GEO. BRADNER, Bloomington, Ills.

FOR SALE.

An ⅛ inch mill train for making Merchant, Band and Hoop Iron. Will be sold cheap.

Apply to **W. W. JONES,**
Near the Lehigh Valley Railroad Depot,
Allentown, Pa.

To Stove Manufacturers and Foundrymen.
The Carbon Stove Company,
Of Burlington, N. J.,

Will sell their Foundry, with all its appurtenances, business and good will, upon very liberal and accommodating terms, offering to any party wishing to engage in the Stove or general Foundry Business a rare opportunity.

The Foundry Buildings, which are of a capacity to employ forty or more molders, are very conveniently located upon navigable tide water on one side, and the Pennsylvania Railroad, with its freight station in front, being on the direct line between New York and Philadelphia.

The Buildings, Machinery and Appliances are all in prime order, and the assortment of Patterns, &c., for Stove, Range or Heater work, unsurpassed.

Address, for terms or other particulars,

CARBON STOVE CO., Burlington, N. J.

FOR SALE CHEAP.

Two Steam Hammers, 200 lbs. each, made by Ferris & Miles and Marchand & Morgan, but little used; have treadle attachments, and are in perfect working order. Also 700 to 800 lb. drop hammer, with shear attachment, board lifter, a valuable tool, all in perfect working order.

A. D. HALL, 158 Ashland Ave. Chicago, Ills.

For Sale, Hardware Business

In successful operation since 1845. Rare opportunity to secure an old and established business. Stock of General Hardware, Iron, Nails, &c., &., will invoice $6000 to $8000. Two story brick business room, 25x90, with cellar under all, for $3000. After first payment will make such terms as will be easy, and cannot fail to suit purchaser. Will assist purchaser at starting, if necessary. Satisfactory reasons for selling will be given.

Address, **C. U. RAYMOND,**
Cambridge City, Wayne Co., Ind.

A **BLAST FURNACE FOR SALE** at Napanoch, Ulster Co., State of New York, on the Delaware and Hudson Canal, with extra facilities, and a capacity of 20 tons per day Anthracite or 15 tons of Charcoal, together with a splendid water-power, goes with the furnace. The furnace is in good order and could be put in blast in a short time. Will be sold very low on accommodating terms. Charcoal can be had for many years.

Address, **H. BANGE,**
94 Gold Street, New York City.

FOR SALE.

At Lowest Manufacturers' Rates,

GUNS & SHEET ZINC,

Best German and Belgian Brands,

By *LOUIS WINDMULLER & ROELKER,*
20 Reade Street, N. Y.

For Sale,
Stove and Tin Business.

Will sell, on good terms, one of the best arranged House Furnishing Stores in Canada West, at St. Thomas. The premises are roomy, the buildings having been arranged especially for this trade, with Tinsmith's workshops and benches complete for 12 men.

Present Stock about $6000.

St. Thomas is the head quarters of the Canadian Southern Railway Co. To a practical, energetic man this offers unusual advantages. Business well established and with good connection. Reason for disposal, present proprietors increasing their wholesale and retail Hardware Store next door to the above premises. Address

HORSMAN & HORSMAN,
Iron and Hardware Merchants,
St. Thomas, Canada West.

FOR SALE,

at 10c. a copy, general *Spanish Weekly Market Review,* written and published by the subscriber. 1 July, 1875, number 196, circulating in Mexico, the West Indies, Central and South America, including Brazil, Spain and Manila, on which certain standard articles of American manufacture are quoted. *Specimen Copies sent free.* The undersigned is also

Translator for Manufacturers and Land Companies,

from and into the
ENGLISH,
SPANISH,
FRENCH,
and GERMAN,

Spanish Catalogues got up correctly and with despatch. Address, **C. KIRCHHOFF,**
Metal Reporter of "The Iron Age,"
Box 3091, N. Y.

Trade Report.

Office of The Iron Age,
Wednesday Evening, June 30, 1875.

During the past week there has been a decided improvement in the outlook for general business, and an advance in the prices of securities. The money market continues very easy, with rates to borrowers on call 2 @ 2½ per cent. Good commercial paper is quotable at 3½ @ 5 per cent.

During the week gold has been firm but quiet. On Thursday the Treasury sold $500,000 at 117·09 @ 118·15. The following table shows the daily range of the premium:

	Highest.	Lowest.
Thursday	117¼	117⅛
Friday	117⅜	117⅛
Saturday	117¼	117⅛
Monday	117⅛	117
Tuesday	117¼	117¼
Wednesday	117¼	116⅞

Government bonds were strong, both here and in London. On Saturday last a call was issued by the Treasury for $5,000,000 of five-twenties, interest to cease September 25. This call was issued at the suggestion of the Syndicate, who had been sold that amount of new fives in Europe. Railroad bonds are strong, notably those of the Pacific Railroads. We give below the closing quotations of Governments.

The stock market has been strong throughout, and prices have tended steadily upward. The principal dealings have been in Pacific Mail, Lake Shore, Western Union Telegraph, Erie, Northwestern, Union Pacific, and St. Paul. We give below the highest and lowest of to-day's quotations of active shares:

The bank statement shows a loss of $2,806,300 in specie, and a gain of $2,591,300 in legal tenders, making a decrease in total reserve of $215,000. The surplus reserve is $639,975 lower than last week, the banks now holding $21,896,500 more lawful money than their liabilities under the law require. The following is a comparison of the averages for the past two weeks:

	June 19.	June 26.	Differences.
Loans	$275,217,500	$276,707,800	Inc. $1,490,300
Specie	11,653,300	8,847,000	Dec. 2,806,300
Leg. tend	68,900,200	71,491,500	Inc. 2,591,300
Deposits	234,068,100	235,768,000	Inc. 1,699,900
Circulation	19,142,000	19,016,500	Dec. 125,500

The foreign trade movements for the week are given as follows:

IMPORTS.

	1873.	1874.	1875.
Total for week	$8,447,831	$6,646,571	$6,934,666
Prev. reported	204,655,775	204,507,010	168,812,667
Since Jan. 1	$213,103,606	$211,153,581	$175,747,333

Among the imports of general merchandise were articles valued as follows:

	Quant.	Value.
Brass goods	3	$50
Bronzes	13	2,503
Chains and anchors	33	1,295
Copper	...	113
Cutlery	62	22,994
Gas fixtures	1	1,113
Guns	40	9,783
Hardware	56	5,810
Iron, pig, tons	1,127	29,860
Iron, cotton ties	826	2,454
Iron, other, tons	463	21,195
Railroad bars	574	8,020
Metal goods	160	20,845
Nails	8	304
Needles	10	5,858
Old metal		3,518
Platina	2	8,015
Per. caps	14	2,460
Saddlery	6	1,399
Steel	914	18,207
Spelter	296,523	17,442
Silverware	1	140
Tin, boxes	8,162	61,317
Tin, 3882 slabs	418,972	78,853
Wire	764	8,736
Zinc	99,376	6,224

EXPORTS, EXCLUSIVE OF SPECIE.

	1873.	1874.	1875.
For the week	$5,568,681	$7,191,644	$5,218,653
Prev. reported	134,640,920	137,789,033	144,980,677
Since Jan. 1	$140,209,601	$144,980,677	$150,199,330

EXPORTS OF SPECIE.

Total for the week	$1,901,918
Previously reported	48,803,782
Total since January 1, 1875	$50,705,700
Same time in 1874	27,676,413
Same time in 1873	26,971,214
Same time in 1872	33,436,823

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. Currency 6's	122½	122¾
U. S. 6s 1881, reg	121	121¼
U. S. 6s. 1881, cou	126¼	126½
U. S. 1862, 5-20 reg	118	—
U. S. 5-20 1862, cou	118⅛	118⅜
U. S. 5-20 1864, reg	118¾	119
U. S. 5-20 1864, cou	118⅞	119
U. S. 5-20 1865, reg	120⅞	121⅛
U. S. 5-20 1865, cou	122⅛	122⅜
U. S. 5-20 1865, reg. new	120⅛	120¾
U. S. 5-20 1865, cou	123⅞	124
U. S. 5-20 1867, reg	121⅛	121⅜
U. S. 5-20 1867, cou	125⅜	125½
U. S. 5-20 1868, reg	121⅛	121⅜
U. S. 5-20 1868, cou	125	125⅛
U. S. 10-40 reg	117¾	118
U. S. 10-40 cou	119⅛	119⅜
U. S. 5s, 1881, reg	117⅜	117⅞
U. S. 5s, 1881, cou	118⅛	118¾

The following were the highest and lowest prices of stocks to-day:

	Bid.	Asked.
N. Y. Cen. & Hudson Consolidated	103⅛	102⅞
Lake Shore	62⅛	61⅛
Rock Island	104	103¾
New Jersey Central	113⅜	113⅛
Michigan Central	69⅛	69⅛
Cleveland & Pittsburgh	91⅛	91⅛
Illinois Central	102¾	102¾
Wabash	5⅛	5⅛
Harlem	131	131
Western Union Telegraph	79⅞	78
Atlantic and Pacific Telegraph	23¼	22⅞
Northwestern	40¼	39⅞
" Pref	51¾	50⅞
Milwaukee & St. Paul	33¾	33¼
Pacific Mail	41⅜	39⅞
Erie	14⅞	13⅜
Ohio & Mississippi	23⅜	23¼
Union Pacific	76⅞	75
Missouri Pacific	50¾	50⅜
Atlantic & Pacific Preferred	15	15
Am. Mer. Union Express	59	59

GENERAL HARDWARE.

The demand for Hardware of every description is, as is usual in midsummer, confined within the limits of the actual present necessities of the trade, and general dullness prevails. We hear of some changes in lists, which will not be completed for a few days. In Foreign Hardware there are no changes to note. The demand for Nails continues in about the same condition noticed for several weeks. We continue to quote 10d. in lots of 200 kegs and over, $3·25 net; for smaller lots, $3·30 @ $3·40 is the general asking price, according to quantity.

Sargent & Co. have removed from No. 70 Beekman street, where they have been for ten or twelve years, to No 37 Chambers street, where they occupy a building running through to Reade, which, with the steam elevator and other conveniences introduced, will give them ample facilities for handling the large quantity of goods which pass through their hands.

The Lock makers have adopted new lists and discounts, changing almost all their prices. This action was taken yesterday (Tuesday), and the only list we have been able so far to obtain is that of the Russell & Erwin Mfg. Co., which we give below. They quote from this list a discount of 40 per cent., and 2 per cent. for cash. It will be observed that the list on Padlocks has also been changed.

PRICE LIST OF RUSSELL & ERWIN MFG. CO.

No. of lock.	Page of 1874 list.	Per doz.
0	89	$5·50
0⅛	89	7·00
00⅛	New	7·50
0¼	89	9·50
00¼	New	9·50
0½	89	6·50
0⅝	89	8·00
00⅝	New	8·50
0¾	89	10·50
00¾	New	10·50
1	89	10·50
01	New	10·50
1½	89	12·50
01½	New	12·50
01¾	New	11·50
02	New	13·50
6½	96	30·00
7½	96	28·00
8	97	20·00
8½	97	17·00
9	100	6·75
9½	100	4·75
10	100	3·75
11	100	6·25
Refrig'tor K'bs.		
400	100	2·00
300	100	2·75
100	100	6·50
12	92	12·50
13	92	14·50
013	78	14·50
013, 2 keys	78	17·00
013½	85	27·00
13½	92	17·50
013½	78	17·50
013½, 2 keys	78	20·00
13¾	92	20·50
013¾	78	20·50
013¾, 2 keys	78	23·00
14	93	18·00
014	80	19·00
18	93	26·00
018	80	27·00
018, 2 keys	80	29·50
019	85	27·00
22	124	4·00
23	91	9·50
25¼	101	32·00
25½	101	30·00
27	101	22·50
28	127	7·00
29	127	8·25
30	127	15·00
31	111	10·00
31¼	111	16·00
31½ C'pl'e	111	38·00
		Per set.
32 B	109	13·00
32 EP	109	23·00
32 HP	109	44·00
33 B	109	19·50
33 EP	109	24·50
33 HP	109	47·00
032 B	New	7·50
032 EP	New	12·50
032 HP	New	33·50
032½ B	New	6·00
032½ E P	New	9·50
032½ HP	New	24·00
033 B	New	9·00
033 EP	New	14·00
033 HP	New	36·50
		Per dozen.
34	110	25·00
35	110	27·00
36	110	21·00
37	110	67·00
38½	126	12·50
39	126	9·50
40	124	2·00
42	124	4·50
42½	124	5·75
44½	125	9·00
44¾	125	9·00
45	129	13·50
46	129	22·50
46½	127	30·00
47	129	15·00
48	126	8·00
50	128	9·50
52	128	16·00
53	128	9·50
54	98	16·50
55	98	19·00
57	104	30·00
057	103	30·00
58	104	18·00
59	130	4·00
60	124	2·50
61	124	3·75
62	123	7·50
63	123	8·75
64	123	9·50
65	123	10·75
T Handles.		
Japanned	123	·75
Tinned	123	1·25
Brass	123	2·50
Silver Pl'd	123	3·50
67	130	Each.
Brass	130	7·50
Bronzed	130	10·00
Elect. Pl'd	130	10·00
Hand Pl'd	130	14·00
Lock.		Per doz.
71	112	5·75
72	112	4·50
072	114	4·50
73	112	8·75
073	114	8·75
073, 2 keys	114	11·25
74	112	4·00
76	113	12·50
77	113	11·25
78	113	14·75
79	113	14·25
80	113	4·75
81	113	5·75
84	164	16·00
85	165	30·00
85 MK	165	32·00
85 Porc'l'n	165	36·00
86	122	5·75
87	122	7·00
88	122	7·75
89	122	9·00
Thumb Knobs.		
Brass	122	2·50
Plated	122	3·50
Mineral	122	2·00
Porc. Jap'd	122	2·50
" Pl'd	122	5·00
" Porc	122	5·00
92	117	22·00
93	99	6·00
With Knobs and Escutcheons.		
1500	99	8·25
93	..	....
With Knobs and Escutcheons.		
1300	99	9·00

No. of lock.	Page of 1874 list.	Per doz.
With Knobs and Escutcheons.		
1100	99	16·00
500	99	7·25
300	99	8·00
100	99	12·75
96	131	2·50
96½	131	2·50
With Knobs.		
1500	131	4·75
1300	131	5·50
1100	131	10·50
500	131	3·75
300	131	4·50
100	131	8·25
Locks.		
100	134	52·00
100½	124	48·00
01	138	84·00
103	142	56·00
104	145	56·00
105	135	34·00
105½	135	34·00
110	158	64·00
115	159	44·00
122	148	96·00
131	162	99·00
132	162	111·00
140	139	50·00
140½	151	53·00
142	149	60·00
143	143	36·00
150	153	75·00
154	155	80·00
161	163	62·00
162	163	72·00
0172	87	80·00
173	83	35·00
0173	83	70·00
174	83	50·00
175	107	62·00
0175	107	82·00
180	New	44·00
180½	New	30·00
181	New	48·00
181½	New	34·00
182	New	46·00
182½	New	32·00
183	New	50·00
183½	New	36·00
184	New	48·00
184½	New	34·00
185	New	52·00
185½	New	38·00
186	New	56·00
199	43	26·00
200	43	31·00
250½	New	5·75
251½	New	7·25
252	47	37·00
253	49	47·00
255	New	7·00
256	New	8·50
260	22	8·50
260½	22	10·50
261	22	10·50
261½	22	12·50
262	23	10·00
263	23	12·00
264	23	12·00
265	23	14·00
270	22	12·50
271	22	14·50
272	23	15·50
273	23	17·50
285	22	15·50
286	22	17·50
300	90	6·00
0300	New	6·00
301	90	7·50
0301	New	8·00
302	90	10·00
0302	New	10·00
303	90	11·00
0303	New	11·00
304	90	13·00
0304	New	13·00
310	90	7·00
0310	New	7·00
311	90	8·50
0311	New	9·00
312	90	11·00
0312	New	11·00
313	90	12·00
0313	New	12.00
314	90	14·00
0314	New	14·00
315	90	17·00
316	90	20·00
0321	New	10·00
0322	New	12·00
0323	New	13·00
0324	New	15·00
340	76	5·50
341	76	9·50
343	76	10·50
344	76	12·50
350	76	6·50
351	76	10·50
353	76	11·50
354	76	13·50
355	77	17·00
418	51	38·00
419	51	44·00
420	51	58·00
421	53	28·00
436	64	21·00
437	64	23·00
438	64	15·00
439	64	17·00
460	74	15·00
461	74	12·00
470	69	44·00
471	69	30·00
472	69	27·00
473	69	24·00
474	69	24·00
475	69	21·00
479	66	25·00
480	67	24·00
481	67	27·00
482	67	30·00
490	71	48·00
495	73	50·00
504	10	5·25
504½	11	6·75
508	10	6·75
508½	11	8·25
509	12	11·50
512	10	8·75
512½	11	11·50
513	13	11·00
514	13	14·50
531	14	17·50
532	14	22·00
535	14	14·50
537	14	14·50
537½	14	15·00
537¾	14	17·00
538	16	8·50
539	17	5·00
Half Knobs.		
500 Jap'd	17	2·00
500 Tin'd	17	2·75
300 Jap'd	17	2·50
300 Tin'd	17	3·75
100	17	5·00
101	17	5·00

No of lock.	Page of 1874 list.	Per doz.
Locks.		
543	15	20·00
544	21	17·00
541½	21	15·00
545	21	21·00
545½	21	18·00
546	21	24·00
546½	21	20·00
548	27	14·00
548½	27	12·00
548¾	27	8·00
550	34	3·50
550½	34	4·75
551	36	4·00
551½	36	5·25
552	36	5·00
552½	36	6·25
557	36	3·75
570	26	12·50
571	26	14·50
572	26	17·50
587	20	20·00
588	20	27·00
599	35	5·00
599½	35	6·25
603	28	10·25
604	28	3·75
605	28	5·00
606	29	4·50
607	29	5·75
607½	29	9·75
608	29	7·00
608½	29	11·00
612	29	6·50
612½	29	5·00
613	29	8·00
613½	29	6·50
614	29	10·00
614½	29	8·50
615	29	12·00
615½	29	10·50
622	29	11·00
623	29	16·00
629	32	3·75
630	32	5·50
630½	32	4·25
631	32	6·25
632	32	8·00
650	33	4·25
651	33	5·50
652	33	3·00
653	33	4·25
655	33	10·25
661	37	10·00
661½	37	10·00
662	37	16·00
665	39	25·00
665½	39	28·00
666	40	40·00
6 6½	46	45·00
Bowl Escutcheons.		Each
80	40	1·00
81	40	1·65
82	40	2·25
Locks.		Per doz.
670	41	13·00
671	41	20·00
672	41	22·50
675	New	27·00
677	New	29·00
678	New	32·00
685	119	39·00
694	95	50·00
695	95	57·00
710	89	12·50
711	89	10·50
712	79	13·00
712, 2 keys	79	15·50
713	79	15·00
713, 2 keys	79	17·50
713½	79	18·00
713½, 2 keys	79	20·50
713¾	79	21·00
713¾, 2 keys	79	23·50
718	81	27·00
718, 2 keys	81	29·50
720	89	13·50
725	102	40·00
778	115	18·00
778, 2 keys	115	20·50
781	115	6·75
790	116	44·00
790½	120	54·00
790¾	121	60·00
791	117	60·00
800	2	6·00
801	2	7·50
802	2	9·50
805	2	9·00

No. of lock.	Page of 1874 list.	Per doz.
806	2	10·50
807	2	12·50
810	4	13·50
811	4	15·50
812	4	18·50
813	4	26·50
820	3	7·50
821	3	9·00
822	3	12·25
825	3	10·50
826	3	12·00
827	3	15·25
830	5	15·00
831	5	17·00
832	5	21·25
833	5	29·25
850	6	5·25
850½	New	5·50
851	6	6·75
851½	New	7·00
855	6	6·75
856	6	8·25
860	1	5·50
860½	New	5·75
861	1	7·00
861½	New	7·25
862	1	9·00
862½	New	9·25
870	7	5·50
871	7	7·00
872	7	9·00
1199	45	28·00
1200	45	33·00
1250	45	39·00
1251	45	45·00
1260	22	7·50
1260½	22	9·50
1261	22	9·00
1261½	22	11·00
1270	25	12·50
1271	25	14·50
1272	25	15·50
1273	25	17·50
1400	55	60·00
1401	55	70·00
1402	55	46·00
1403	55	40·00
1404	55	48·00
1405	55	58·00
1407	55	51·00
1430	59	47·00
1431	59	57·00
1432	59	38·00
1440	59	35·00
1580	18	18·00
1583	18	13·50
1587	19	21·00
1587, 2 keys	19	24·00
1605	30	5·25
1607	30	6·25
1610	31	13·50
1610, 2 keys	31	16·50
1612	31	15·50
1612, 2 keys	31	18·50
1624	61	28·00
1625	61	31·00
1627	63	23·00
1627½	63	26·00
1661	38	12·00
1870	8	8·00
1871	8	10·00
1872	9	15·50
1873	9	17·50
1880	New	9·50
1881	New	12·75
1882	New	17·00
1883	New	20·25
2400	57	64·00
2401	57	74·00
2402	57	50·00
2403	57	44·00
2404	57	52·00
2405	57	62·00
2407	57	55·00
2430	59	51·00
2431	59	61·00
2432	59	42·00
2436	65	24·00
2437	65	27·00
2438	65	18·00
2439	65	21·00
2456	72	22·00
2457	72	28·00
2470	70	48·00
2471	70	40·00
2480	68	28·00
2481	68	31·00
2482	68	34·00
2612	30	7·50
2661	38	13·00

Brass Keys.—Pages 170 to 178.

Class No.	Per dozen.	Class No.	Per dozen.	Class No.	Per dozen.
1	$1·25	50	$2·50	79	$1·50
1½	1·25	51	1·50	80	1·50
2	1·2	52	4·50	80½	1·50
2	1·25	53	3·50	81	2·00
3	1·50	54	2·00	81¼	2·00
4	2·00	54½	2·00	81½	2·00
5	3·00	55	4·50	82	2·00
6	3·00	56	4·50	84	1·50
7	1·50	57	2·50	85	1·50
8	1·25	58	4·50	86	1·75
9	1·25	59	4·50	88	1·50
10	1·50	60	4·50	89	1·50
11	1·50	61	4·50	90	1·75
12	1·50	62	3·00	91	4·00
13	2·00	66	3·50	92	1·75
14	2·00	67	4·50	93	2·25
15	2·25	68	4·50	94	2·25
16	1·25	69	4·50	95	4·50
17	1·25	70	2·00	96	2·00
19	2·50	71	1·50	97	4·50
21	2·50	72	1·50	98	4·50
22	2·50	73	2·00	150	1·50
23	3·00	74	2·00	151	1·50
24	2·50	75	1·50	152	1·50
49	1·50	76	2·50	153	1·50
49½	1·50	77	2·50		

Tinned Iron Keys.—Page 178.

Class No.	Per dozen.	Class No.	Per dozen.	Class. No.	Per dozen.
120	$0·60	123	$0·60	130	$0·60
121	·60	125	·60	131	·60
122	·60	129	·60	136	·60

Small Malleable Iron Keys, Tinned—Page 178.

Class.	Per doz.	Class.	Per doz.	Class.	Per doz.
160	$0·60	163	$0·60	165	$0·60
161	·60	164	·60	166	·60
162	·60				

Parker's Patent Steel Keys, Nickel Plated.—Pages 182 and 183.

Class.	Per doz.	Class.	Per doz.	Class.	Per doz.
398	$3·00	407½	$2·50	426	$3·00
399	3·00	408	2·50	427	2·75
400	3·00	408½	2·50	450	7·00
401	3·00	409	2·50	451	7·00
402	4·00	409½	2·50	452	7·00
402½	4·00	410	4·00	453	7·00
403	4·00	410½	4·00	454	7·00
404	2·50	411	5·00	454½	7·00
405	2·50	412	....	455	7·00
405½	2·50	420	....	456	7·00
406	2·50	421	3·00	457	7·00
406½	2·50	422	3·00	458	7·00
407	2·50	425	2·75		

Metal Plate Escutcheons.

Silver Plated.

No.	1	2	3	4	
Silver Plated	$1·00	1·00	1·00	1·00	per single doz.
No.	5	6	7		
Silver Plated	$1·00	1·00	4·50		per single doz.
No.	8	9	11	85	
Silver Plated	$5·00	6·00	6·75	4·50	per single doz.
No.	15	16	17		
Silver Plated	$1·12	1·50	3·50		per single doz.
No.	18	103	104	107	
Silver Plated	$3·50	1·00	1·00	4·50	per single doz.
No.	116	119	150		
Silver Plated	$1·50	3·50	7·00		per single doz.

Porcelain Escutcheons.—Page 191.

Nos.	Per single dozen.	Nos.	Per single dozen.	Night Keys. Nos.	Per doz.
1	$0·80	13	$7·50	4	$1·25
2	·80	14	7·50	6	1·25
3	·80	100	7·50	7	1·25
4	·80	101	·80	116	1·25
8	1·25	102	7·50		
9	1·50	103	·80		
10	2·50	108	1·25		
11	1·75				

Metal Drop Escutcheons.—Pages 186 and 187.

Per Single Dozen.	No. 20	No. 21	No. 22	No. 23	No. 25	No. 26	No. 28	No. 30	No. 31	No. 031	No. 32	No. 126
Japanned	$	$	$	$	$	$	$	$1·15	$1·50	$1·50	$1·50	$
Silver Plated	4·00	4·00	4·00	4·50	4·00	4·00	4·50	5·50	5·50	5·50	6·00	4·00
Hand Plated	...	...	...	...	...	...	...	9·00	9·50	9·50	10·50	...

Pages 188 and 189.

Per Single Dozen.	No. 40	No. 41	No. 42	No. 43	No. 60	No. 61	No. 61½	No. 62	No. 62½	No. 100	No. 102	No. 141	No. 177
Japanned	$2·75	$2·75	$2·75	$2·75	$0·75	$1·12	$1·12	$	$	$2·62	$2·62	$2·87	$
Brass	5·00	5·00	5·50	8·50	2·75	3·50	3·50	5·50	5·50	6·75	6·75	5·00	...
Electro Plated	6·00	6·00	8·50	14·00	4·75	5·50	5·50	6·25	6·25	10·00	10·00	6·00	...
Hand Plated	19·00	19·00	23·00	32·00	8·25	9·00	9·00	12·00	12·00	18·00	18·00	18·00	20·00

Door Knobs.—Page 193.

Nos.	Per doz.	Nos.	Per doz.	Nos.	Per doz.
101	$9·00	203	$7·25	410	$2·25
110	9·00	300	3·00	450	4·50
151	12·00	310	3·00	460	4·50
160	12·00	360	6·50	1000	21·00
202	6·75	400	2·25	1050	21·00

Canada Bolt and Sash Knobs.—Page 194.

No.	Bolt Knobs. Per doz.	Sash Knobs. Per doz.	No.	Bolt Knobs. Per doz.	Sash Knobs. Per doz.
400	$1·20	$1·75	100	$3·50	$5·50
300	1·75	2·25	101	....	5·50

Brass and Plated Door Knobs—Page 194.

Number, Per dozen.	50.	51.	54.	60.	61.	62.	63.
Brass	$17·00	$19·00	$...	$21·00	$27·00	$24·00	$33·00
Electro Pl't'd	...	36·00	40·00	48·00	54·00	51·00	59·00
Hand	...	55·00	58·00	60·00	66·00	63·00	94·00

Single Knobs and Roses—Page 194.

Number, per Single Doz.	50.	51.	60.	61.	64.
Brass	$8·00	$8·50	$10·00	$13·00	$21·50
Electro Plated	..	18·00	24·00	27·00	..
Hand	..	27·50	30·00	33·00	..

Closet Knobs *two-thirds* the price of pairs.
Brass or Plated Knobs, on brass spindles, add extra, per doz., $4·00.

Single T Handle and Rose—Page 197.

Nos.	1	2	3	4
Per doz.	1·25	6·75	8·00	16·00

Cranks, Handles and Knobs—Page 197.

Nos.	13	14	19	21	31
Per doz.	$7·00	24·00	20·00	15·00	3·00
Nos.	34	35	39	39½	51
Per doz.	$4·00	7·50	6·00	7·50	25·00
Nos.	52	61	62	5100	6100
Per doz.	$45·00	27·00	50·00	27·00	30·00

Bell Pulls.—Page 203.

No.	Per doz.	No.	Per doz.	No.	Per doz.
500	$3·25	101	$9·00	1000	$13·50
99	9·00	102	9·00		
100	9·00	300	4·00		

Electro Plated and Hand Plated Bell Pulls.—Page 203.

	Electro Plated. Per doz.	Hand Plated. Per doz.
Round Seat, Round Pull	16·00	27·00
Square Seat	16·00	27·00
Concave Seat, Round Pull	45·00	80·00
Small Shield, Sq. or Round Pull	21·00	33·00
Large Shield, Sq. or Round Pull	33·00	40·00
Name Plate, Sq. or Round Pull	30·00	40·00
New York City Pattern, No. 7		20·00
New York City Pattern, No. 12		24·00

Bell Levers.—Page 203.

No.	Per doz.	No.	Per doz.
9	$13·50	11	$27·00
10	16·00	12	35·00

Bell Slides or Pulls.—Page 203.

No.	Per doz.
9938	$3·25
9939	8·25

Sliding Door Trimmings.—Page 205.

Flush Pulls, Brass, Astragal Front, Philadelphia Pattern .... per pair, $2·75
Flush Pulls, Brass, Astragal Front, Boston Pattern .... per pair, 3·37
Flush Pulls, Brass, Plain Front..per single doz. 8·00
Flush Cups and T Handles No. 1, diameter of Cup, 2 inches .... per pair, 2·75
Flush Cups and T Handles No. 2, diameter of Cup, 2½ inches .... per pair, 2·75

Padlocks.

No.	Page of 1874 List.	One key. per doz.	Two keys. per doz.
5000	New	$1 05	$1 18
3000	New	1 50	1 73
1000	269	2 25	3 05
1200	269	2 75	3 55
1203	269	3 50	4 50
1205	269	4 30	5 51
1206	269	5 00	6 21
1209	269	5 75	7 17
1210	269	5 00	6 21
1212	269	7 50	8 92
1213	New	10 50	12 00
1309	269	7 50	8 92
1313	New	12 50	14 00
2000	277	1 50	1 73
200	277	1 60	1 83
201	277	1 75	1 98
202	277	1 90	2 13
203	277	2 10	2 33
204	277	2 30	2 66
205	277	2 90	3 30
206	277	3 05	3 61
207	277	4 00	4 56
208	277	4 25	4 81
209	277	3 50	4 06
210	277	4 10	4 66
211	277	5 75	6 67
212	277	5 50	6 06
213	277	9 00	9 92
280	277	9 00	9 92
301	277	3 50	3 73
306	277	4 75	5 31
313	277	11 00	11 92
314	277	5 50	6 06
		Brass. per doz.	Plated per doz.
1	278	$2 25	$3 75
2	278	2 25	
3	278	3 00	
4	278	3 25	
5	278	3 25	

New Padlocks.

No. Size.
1213, 2½ inch, Heavy, Extra Finish, 3 Tumblers and Bridge Ward, Nickel Plated Patent Steel Keys, Spring Shackel & Drop.
1313, 2½ inch, With Chain attached, same style as No. 1213.
5000, 2 inch, Spring Shackle; Fancy Key; assorted four kinds to the dozen.
3000, 2¼ inch, Cast Iron; plain without drop, with 12 varieties of keys to the dozen.

Steel Padlock Keys, Nickel Plated.—Page 269.

No. 1000	per gross,	$9·60
No. 1200	"	9·60
No. 1203	"	12·00
Nos. 1205, 1206, 1210	"	14·50
Nos. 1209, 1212, 1309	"	17·00
Nos. 1213, 1313	"	18·00

Malleable Iron Padlock Keys, Tinned.—Page 278.

No. 5000	per gross,	$1·50
Nos. 3000, 2000	"	2·50
Nos. 200, 201, 202, 203, 301	"	2·75
No. 204	"	4·25
No. 205	"	4·75
Nos. 206, 207, 208, 209, 210, 212, 306, 314	"	6·75
Nos. 211, 213, 280, 313	"	11·00
Nos. 5000 to 205, assorted	"	3·30
Nos. 5000 to 207	"	3·80
Nos. 5000 to 211	"	4·50
Nos. 5000 to 280	"	5·30

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.

Wednesday, June 30, 1875.

Scotch Pig.—During the week the quotations for makers' Irons have gone up several shillings per ton over the figures last cabled, and the market is now firm at the rise, apparently owing to a genuine shipping demand, the returns for last week showing a very large increase over the corresponding period of last year. The following are makers' quotations:

Gartsherrie No. 1	68/
Coltness No. 1	69/
Glengarnock No. 1	68/6
Eglinton No. 1	62/

Manufactured Iron continues unchanged.

Rails.—A fair business is doing under an improving demand, although prices remain weak. Welsh are quoted £6. 10/ @ £6. 15/.

IRON.

American Pig.—We find in some quarters a slightly more cheerful feeling, and an impression that the market is likely to improve. These views are not, however, at all general, and the state of affairs seems much as it was last week. There is a steady demand in a small way for Iron for consumption, but it is generally conceded that stocks are increasing. It should be borne in mind, however, that this is usually the dullest season of the year. If the demand should materially increase by September, say, it is not unlikely that a slight advance would take place, but it could not be much, as higher prices would cause the blowing-in of furnaces now idle. As has for some time been the case, the stronger companies are holding firmly to $28 and $26 for No. 1 and No. 2 Foundry, while other sellers make concessions. We quote No. 1 Foundry, $27 @ $28; No. 2 Foundry, $25 @ $26; Gray Forge, $23 @ $25.

Scotch Pig.—The market seems firmer, in sympathy with the advance on the other side. The business continues small, as it has been for a long time. We quote Coltness, $31 @ $32; Glengarnock, $32 @ $33; Gartsherrie, $31 @ $33; Eglinton, $30 @ $31.

Rails.—We note the sale of 500 tons American at $50, delivered in New York; also, 1500 tons English, in bond, on private terms. We quote American, $48 @ $50, at works.

Old Rails.—We continue our quotation of $26·50, at which price recent sales have been made; 100 tons sold at $25 in an inconvenient locality. There are rumors of large sales on private terms.

Scrap.—From yard here the quotation is $30 @ $31. We note sales of 500 tons at $32, deliverable at New Bedford. About 400 tons in different lots have sold at prices ranging from $26 to $28, at dock.

METALS.

Copper.—Sales for the week have summed up 350,000 pounds Lake Copper at 22⅝c. and 22¾c., together with some small lots at 23c. There are more purchasers at 22¾c, but 23c. is firmly insisted upon. Baltimore, in a small way, sells at 23c. Europe remains steady at £82. 10/ for Chili Bars, and £90 Best Selected. There is no disposition shown to sell futures in this market at any abatement from late rates, and the entire market closes, if anything, with a stiffening tendency. So close upon the national festivities, the metal markets on this coast, as a rule, are extremely quiet, and it generally takes a week till we shake off this midsummer lull. Meanwhile the manufacturers during the whole of June have shown no anxiety to operate beyond pressing requirements, even at the comparatively low figures ruling. No argument to induce them to buy liberally has been of any avail. We shall not attempt to argue with them as to whether the policy of abstaining from purchases till compelled to enter the market in a lump was or is the correct one for them to pursue. The outside lots that are occasionally offered and sold a little below current market rates are not large enough to bring down prices, hence the moment any larger purchases have to be made, consumers are obliged to approach the few large holders, who, well fortified as they are, make a common stout front. During the month of July Copper will be put to the test; we shall be able to judge whether or not the manufacturers are selling enough to warrant larger purchases of Copper, and the main holders will have to come to some resolution, should the Domestic demand not be brisk enough. They may induce some export trade by lowering prices, and consumers may then take courage and lay in, if but a moderate supply. Manufactured is well sustained as follows: New Copper Sheathing, 30c.; Bolts and Braziers, 31c.; Bronze and Yellow Metal Sheathing, 21c.; and Yellow Metal Bolts, 28c.

Tin.—The market is rather heavy at the following gold quotations, for lots of 50 to 100 tons: Straits, 18⅝c.; English Refined, 19c. @ 19¼c., nominally; Common do., 18⅝c. @ 19c.; Australian, 18c. @ 19c.; and Banca, 23c. @ 23¼c The stock of Straits Tin, according to the statistics of Messrs. White & Haskell, of this city, was, on the 1st of January, 1875, at New York and Boston, 600 tons; the imports were 1783

tons, making a supply of, together, 2383 tons, while there were delivered to consumption during the six months 2113 tons, leaving a stock of 270 tons to-day. Of Common English, New York alone had a stock of 25 tons on January 1, imported 325, delivered to consumption 325, leaving us with a stock of 25 tons to-day. We commenced the year with a stock of 10 tons English Refined, imported 95 tons, and consumed the entire supply. Of Banca, Per., and Austral we had no stock January 1, imported altogether 97 tons, and remain with a stock on hand of Austral of 66 tons. In other words, the total stock on January 1 was 635 tons, the imports 2300, making the supply 2935, out of which there were handed over to consumption 2574, leaving a stock of but 361 tons. This statement is a highly satisfactory one, when we consider the fearfully dull times we have passed through, and encourages the hope that the ensuing six months will show even larger deliveries. The difficulty which Tin encounters in the midst of large deliveries, both in Europe and this country, is the dread of Australian production, till we shall be able to form a better judgment on this subject. By telegraph from Europe we have the quotation of £83 for Straits, and from Singapore it was wired $22·25 per picul on the 26th inst. Tin Plates are quiet, but firm, as follows: Charcoal Bright, per box, gold, in large lots, ordinary brands, $8·25 @ $8·50; ditto Terne, $7·50 @ $7·75; Coke, $6·75 @ $7; ditto Terne, $6·75 @ $7; all gold.

Lead.—The large sale which we reported a week ago took place on account of the cheap figure at which the Lead was obtained, and having passed into the hands of large consumers, the entire market has been placed on a remarkably sound footing; not that we expect a high ruling hence-forward. There will be plenty of Lead after awhile, but the operation we have alluded to has imparted confidence. It has sufficiently shown that, at a certain figure, there is a readiness to buy Lead, even in large lines, in anticipation of the fall demand that is to come. The market has been inactive since, but quite steady, some 100 tons changing hands between 5·95c. @6c., gold, for Domestic, while Foreign, as heretofore, with an occasional sale, commands between 6¾c. and 6⅞c., gold. Prices in Europe have apparently not yet touched bottom. The manufactures of Lead are steady at 8¾c. for Bar, 9¼c. for Pipe, and 9½c. for Sheet, less 10 per cent.

Spelter and Zinc.—Little business is transacting in Spelter, the sales being confined to small lots of Domestic at 7·15c. and 7¼c., currency, to supply immediate wants, while nothing transpires in Foreign, which we continue to nominally quote 7¼c. @ 7⅝c., gold. Europe is, on the whole, less active at the advanced rates demanded, the more pressing wants in England and France having from all appearances been attended to for the time being by the extensive spot and future purchases that were made during the month of May. Sheet Zinc remains unexcited at 8¼c. @ 8⅝c., gold.

Antimony.—The moderate sales effected of this metal go at 13¼c., gold, a figure not yet in keeping with the higher cost of importation. With a brisker demand, prices may harden.

COAL.

The demand for Coal has not been brisk, even with the limited supply sent to market, because it was only purchased for immediate use, but now that the companies have fixed their prices on board vessels at the different shipping ports, dealers and consumers can begin to lay in their supplies. Prices will be advanced every month up to November the same as heretofore, but what the advance will be each month will be determined by the committee, which meets every month for the purpose of arranging the advance, which will depend to a great extent on the state of the trade. So soon as matters are adjusted, and the trade resumes its usual regularity, there is expected to be a good demand that will take the production steadily.

The collieries that are in a condition to work will all be in operation in the course of the week. We give the loss and gain from the different regions since the strike commenced:

	Loss.	Gain.
Schuylkill	1,404,826	.....
Lehigh	1,507,048	.....
Wyoming, Lackawanna Reg.	.....	888,580
Shamokin	.....	67,670
Lykens Valley	.....	20,281
Bituminous moved toward the seaboard	.....	56,187

As the lower portion of the Wyoming region was not at work to any extent, the whole gain was in the upper portion, known as the Lackawanna Basin.

We quote as follows: Anthracite, $4·85 @ $5·80; Cumberland, $6·50 @ $7; West Virginia, $6·75 @ $7; James River Steam, $6·25; James River Carbonite, $9 @ $9·50; Kanawha House, $14·25; American Gas, $7 @ $8·00; American Cannel, $12 @ $14; Pennsylvania and Westmoreland, $6·75; Murphy Run, $6·50; Newburg Orrel, $6·50; Sterling Ohio, $10; Ince Hall, $17 @ $18; Liverpool House Cannel, $17; Liverpool Gas, $12; Newcastle Gas, $7; Scotch, $7·50 @ $8.

The Coal transported over the Cumberland Branch Railroad during the week ending June 26, 1875, amounted to 6551 tons, as against 5778 tons shipped in the corresponding period of last year, showing an increase of 773 tons. Over the Cumberland and Pennsylvania Railroad, for the same period, the shipments were 53,749 tons, against 47,652 tons shipped in 1874, an increase of 6097 tons. The aggregate amount of Cumberland Coal shipped by the various companies so far this year amounts to 1,012,629 tons.

OLD METALS, PAPER STOCK, &c.

Business in this market still continues very dull, and our quotations remain the same as last reported, with the exception of Rags, which are without demand and have declined ¼ cent a pound. Old Metals remain unchanged, the demand being light, and stocks are abundant. Hemp and Grass Rope are inactive and unimproved, and are selling below quotations. The purchasing prices offered by dealers are as follows:

Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, heavy, 13c. @ 14c.; Lead, solid, 5½c.; Tea Lead, 4½c.; Zinc, 4½c. @ 4½c.; Pewter, No. 1, 18c.; do., No. 2, 8c. @ 12c.; Spelter, 5c. @ 5½c., Wrought Iron, 1½c.; Sheet do., ½c.; Cast, do., ½c.; Machinery, do., ¾c.

Rags, &c.—Canvas, Linen, 4½c. @ 5¼c.; do. Cotton, No 1, 5¾c. @ 6¼c.; No. 2, 2¼c.; White, No. 1, 6¼c.; No. 2, 4c.; Colored, do., 2c. @ 2½c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 5c. @ 5½c.; Gunny Bagging, 1¼c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1¼c.; Grass Rope, 2¼c. @ 2⅝c.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending June 29, 1875:

Hardware.

Anderson, Merchant & Co.
Files, cks., 22
Barton, Alexander & Waller,
Casks, 1
Wire, cks., 5
Calhoun, Robbins & Co.
Packages, 2
Fuller Bros.
Cutlery, cks., 1
Hardware, cks., 1
Friedmann & Lauterjung,
Mdse. pkgs., 3
Field A. & Co.
Casks, 1
Cutlery, cks., 2
Anvils, 1
Gillespie J. D. C.
Crates, 6
Guental Geo. & Co.
Cases, 27
Hoe H.
Pens, cs., 1
Hildick A. H.
Wire, cks., 1
Casks, 1
Anvils, 50
King, Briggs & Co.
Cases, 2
Lau & Garlichs,
Cases, 1
Laughland & Co.
Wire netting, cs., 8
Casks, 4
Bales, 3
Hay bands, bdls., 200
Merchants' Dispatch Co.
Cases, 2
Packages, 3
Owen A.
Packages, 4
Pendegrast Bros. & Co.
Wire rigging, coils, 10
Patterson Bros.
Packages, 4
Rosenthal J. & Co.
Packages, 1
Simpson T. H.
Packages, 4
Schuyler, Hartley & Graham,
Guns, cs., 1
Strasburger, Pfeiffer & Co.
Cases, 6
Sawyer John,
Wire rope, reels, 2
Spies, Kissam & Co.
Guns, cs., 2
Cases, 1
Tomes Francis & Co.
Guns, cs., 2
Taylor Thos.
Wire, pkgs., 2
Wiebusch & Hilger Mfg. Co.
Cases, 3
Order.
Cases, 12
Packages, 8

Iron.

Eneas Jos.
Scrap, tons, 6
Fleitmann & Co.
Plates, crates, 100
Flues, Spielmann & Co.
Sheet, bxs., 25
Irwin R. & Co.
Pig tons, 100
Leaycraft & Co.
Barrels, 13
Marvel Wm. D.
Ore, kilos, 420,000
Phelps, Dodge & Co.
Sheet, bdls., 112
Prosser Thos. & Sons.
Boiler tubes, bdls., 33
Windmuller L. & Rocker
Sheets, cks., 130
Order.
Pig, tons, 200
Plates, 4
Ore, tons, 267

Steel.

Hogan John,
Bundles, 58
Cases, 5
Jacobs, Strouse & Co.
Straps, cks., 6
Naylor & Co.
Frog points, 12
Bars, cs., 3
Castings, 6
Sulzbacher & Heyman,
Packages, 143
White L. C.
Bundles, 131
Order.
Scrap, spring, lots, 1

Metals.

Byrne Joseph & Co.
Tin plates, bxs., 700
Bruce & Cook,
Tin plates, bxs., 80
Cort N. L. & Co.
Tin plates, bxs., 1516
Canadian Bank of Commerce,
Tin plates, bxs., 732
Douglass Jas.
Scrap, copper, lbs., 46
Darrell & Co.
Scrap, copper, tcs., 2; cks., 1
Eneas Jos.
Brass, lbs., 3360
Haxtum B.
Lead, pigs, 4600
Jex Wm.
Scrap, copper, pkgs., 2
Leaycraft & Co.
Brass, cks., 9; barrels, 5
Copper, cks., 6
Lead, bbls., 31
Naylor & Co.
Tin plates, bxs., 80
Phelps, Dodge & Co.
Tin plates, bxs., 7600
Taggers, 60
Pearsall J. & T.
Scrap, pkgs., 6
Order.
Tin plates, bxs., 3419

PHILADELPHIA.

PHILADELPHIA, June 29, 1875.

The market presents no change since my last, unless it be that there are fewer transactions and more inquiry as to prices, resulting in no business. Prices are quotably as before, but the shading that is done to effect sales is sufficient to justify a quotation of a full dollar less all round in Pig Metal. There seems to be a disposition among Furnace men to increase production, since coal is more plentiful, and it is presumable that a better demand for Iron will shortly appear. Although there are now no large stocks of Pig Metal on hand, all reports to the contrary, notwithstanding there very soon will be if production is increased by one-half or one-third the stacks now idle. Manufactured Irons are as quiet as Pig, Bars especially being very dull, while Rails, although there are many inquiries, move very slowly. The Steel Rail trade is probably the best line now in the business, as all the works are busy on good orders, and some with enough to fill the remainder of the year. Old Rails are quiet, with small sales at last week's figures. Scrap is in fair demand, and some lots have lately arrived from England for this market which will leave a margin to shippers. The general tone of the market is weak, and there is nothing in the near future to indicate the probability of any change for the better. Prices continue as follows, nominally, but actually $1 less per ton will buy, and in some instances even a greater reduction:

PIG METAL.—No. 1 Foundry, $27; No. 2, $26; Gray Forge, $24 to $25.

MANUFACTURED IRONS.—BARS.—2·6c. to 2·8c. per lb.

RAILS.—$48 to $50, at works.

OLD RAILS.—$27 to $28.

SCRAP.—$31 to $32.

The sales have been very trifling, and include 1000 tons Mixed Nos. 1 and 2 Foundries at $26·50 and $25; 1000 tons No. 1, $27; 500 tons Gray Forge, $24; 1000 tons ditto on private terms; 1100 tons No. 2 Pipe Iron, $24. Rails—500 tons for Eastern delivery, $48; and 1100 tons for Western Road on private terms. Old Rails—500 tons equal to $27 here; and some small lots of Scrap, amounting in the aggregate to several hundred tons, at quotations.

PITTSBURGH.

PITTSBURGH, June 29, 1875.

PIG IRON.—While business is holding out very well for this season of the year, it is slacking off, as it nearly always does during the latter part of June, as it is customary with the most of the mills to shut down during the first half of July to take stock and make repairs; furthermore, the market for the products continues unsatisfactory, and then, again, the fact that an effort is being made to put up prices causes the mills to take bold sparingly and buy only to supply their immediate wants. There would be no difficulty in placing a considerable quantity for late summer and fall delivery at $24, 4 mos., which is regarded as the ruling price, but there are no sellers under $25, 4 mos., and producers generally appear confident of obtaining the price they are now asking, claiming that it is only a question of a little time. Several sales were effected this week and last, for immediate delivery, at $25, 4 mos., and $23·50 to $24, cash, but they were mostly small lots, and the iron was of a little better quality than ordinary, and beside it was wanted for a specified purpose. In a word, there is a difference of just about one dollar per ton between producers and consumers; the former are very urgent for better prices, claiming that current rates do not cover actual cost, while the latter, on the other hand, allege that the raw article is higher relatively than its products. The market for foundry grades continues quiet and unchanged.

QUOTATIONS.

No. 1 Foundry	$27 @ $28	—4 mos.
No. 2 Foundry	25 @ 26	—4 mos.
Gray Forge	24 @ 25	—4 mos.
White and Mottled	22 @ 23	—4 mos.

MANUFACTURED IRON.—The general position of the market for finished irons remains substantially unchanged, as compared with last week, with the exception that orders continue to fall off, and some of the mills have changed from double to single turn. Manufacturers all agree in reporting trade unsatisfactory, that, in consequence of a strong competition, prices have been forced down to a point that afford little or no margin for profit. Quotations are still made at $2·25 to $2·30, Pittsburgh, and $2·35 to $2·40, Eastern classification. Orders are still offering from the East, but at ruinously low rates, so low, indeed, are some of them that they receive little or no attention.

NAILS.—The nail trade continues to fall off; some of the factories have shut down and others are piling up, and it is probable there will be a pretty general suspension about the first of July. Prices, however, are maintained, but it is proper to state that there is no room for cutting, as current rates, $3, sixty days, do not much more than cover actual cost of manufacture. Horse Shoes continue fairly active, although this is usually considered the dull season.

STEEL.—There is nothing new to record in connection with the steel trade; business continues fairly active, the best evidence of which is that the mills are all in operation, as they have been ever since the first of the year. There is in this, as almost every other branch of business, a good deal of complaint in regard to prices, which have been cut so close that there is little or no margin for profit.

SCRAP IRON—Continues dull, as it usually is at this particular time, but an improved trade next month, or after the mills have got through stock taking, is expected. Prices unchanged, No. 1 Wrought $42 to $33, 4 months, delivered at mills.

NOVELTY GOODS.—The Jacobus & Nimick Manufacturing Company report a continued steady demand for locks, scales, knobs, as well as Novelty goods generally; that they have been working steadily ever since the 1st of January, with the exception of their foundry, which has been stopped temporarily to make some necessary repairs. No change in their price list or discounts.

The Pittsburgh *Commercial* of June 26th says: The metal market has continued rather quiet during the week, and the volume of transactions has been sensibly diminished, the aggregate of the sales reported being 1891 tons. This is due largely to the fact that the rolling mills are generally preparing to take account of stock, and, consequently, are not buying metal except as absolutely necessary. After the 1st inst. we may safely expect a somewhat more active business. Values are firm, and, indeed, there is a slight upward tendency, one sale of 200 tons gray forge having been made at $24 50, and two sales of 100 tons each, extra gray forge, at $25 per ton. The bulk of transactions is, however, at $24 for No. 1, at which rate 800 tons were sold. In addition to the sales given below we learn of a sale made by a furnace in the Shenango Valley of 5000 tons of Bessemer pig metal, to go to Johnstown, at a private price. Nothing of especial importance is reported in the way of muck bar, blooms or scrap iron. There continues to be an active movement of iron in these forms, as the mills are using them largely. Quotations are unchanged, and a few transactions are noted at $75 per ton for charcoal blooms; $42·50 for muck bar; $28 to $30 for ordinary Wrought Scrap. We report the following sales:

BITUMINOUS COAL SMELTED FROM L. S. ORE.

450 tons gray forge	$24·00—4 mos.
200 tons gray forge	24·50—4 mos.
200 tons neutral, gray forge	24·00—4 mos.
100 tons gray forge	23·00— cash.
100 tons white neutral	22·00—4 mos.
100 tons gray forge, extra	25·00—4 mos.
100 tons mottled iron	24·00—4 mos.
100 tons gray forge, extra	25·00—4 mos.
100 tons gray forge	24·00—4 mos.
100 tons gray forge	24·00—4 mos.
50 tons gray forge	26·00—4 mos.
20 tons foundry	

CONNELLSVILLE COKE.

200 tons gray forge	$24·00 4 mos.

ANTHRACITE.

30 tons No. 1 foundry, extra	$28·00 4 mos.

CHARCOAL.

31 tons foundry H. R.	$30·00 cash and 4 mos

MUCK BAR.

100 tons neutral	$42·50—4 mos.

BLOOMS.

10 tons charcoal	$75·00 4—mos.

BOSTON.

JUNE 26.—*Pig* would call for an imaginative mind to reveal any business or any change in prices. The market is at a complete stand, with sellers utterly indifferent to quotations. Buyers are somewhat anxious for sales, but for this week the reports received to all inquiries are that not a ton has been sold. The reports from abroad are still discouraging to foreign Irons, which have almost wholly lost their market here from the competition and excellence of American Pig, and must of necessity now sell at a dead loss to importers. This market is just now without quotations further than to be "a dollar or two above New York," which still quotes Eglinton, $29 to $30; Coltness, $31 to $32; Glengarnock and Gartsherrie, $31 to $33. American quotes on wharf, here, No. 1, $29 to $31; No. 2, $22 to $27, and Gray Forge, $21 to $24. *Bar* is having even less business than a week ago, and prices have again begun to vacillate. The range on job lots is from $58 to $60 for refined. At this price no one is disposed to sell a round lot, nor in fact is there any inquiry for such invoices. The stock is quite small, some sizes being quite scarce. In these odd and wanted numbers there is a slight move in common Iron, which sells down to $54. *Steel* is having a slightly improved inquiry for machinery and small tool, with prices steadily maintained. We quote American Tool, 15c. to 15½c.; American Machinery, 9½c. to 10c.; do. Cash Tires, 8½c. to 12½c.; Sweet's Excelsior Tire, 7c. to 7½c.; English Tool, 16c. to 17c.—*Com. Bulletin.*

CINCINNATI.

Messrs. L. R. HULL & Co., under date of June 28, write us as follows: PIG IRON.—The usual June dullness is prevailing to some extent, and consumers are not disposed to purchase in anticipation of their wants. Still, if the expected improvement in demand is realized next month, we may reasonably hope for a more buoyant feeling in all grades. The reports from the East seem to indicate that bottom prices are about reached, and if this is true the reaction may come at any time.

HOT BLAST CHARCOAL.

Hanging Rock No. 1	$ ton.	$28·00 @ 29·00—4 mos.
" " No. 2		26·00 @ 27·00—4 mos.
" " Forge		24·00 @ 25·00—4 mos.
Virginia No. 1		27·00 @ —4 mos.
" No. 2		25·00 @ —4 mos.
" Forge		24·00 @ 25·00—4 mos.
Tennessee No. 1		26·00 @ —4 mos.
" Forge		24·00 @ 25·00—4 mos.
Alabama No. 1		26·00 @ —4 mos.
Missouri No. 1		28·00 @ 29·00—4 mos.
" No. 2		26·00 @ 27·00—4 mos.

HOT BLAST STONE COAL.

Missouri No. 1	℔ ton.	$28·00 @ —4 mos.
" Forge		28·00 @ —4 mos.
Ohio No. 1		25·00 @ 28·00—4 mos.
" Forge		24·00 @ 26·00—4 mos.
Am. Scotch, No. 1		25·00 @ 26·00—4 mos.

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel	℔ tn.	$35·00 @ 40·00—4 mos.
Missouri " "		35·00 @ 40·00—4 mos.
Kentucky " "		35·00 @ 40·00—4 mos.
Tennessee " "		30·00 @ 40·00—4 mos.
Georgia " "		30·00 @ 40·00—4 mos.
Alabama " "		32·00 @ 40·00—4 mos.
Machinery and Forge		30·00 @ 35·00—4 mos
Blooms		70·00 @ 90·00 —4 mos.

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of June 28, writes us as follows: The market for all grades of metal is dull, with a strong tendency to inside figures. The usual time, 4 mos., is allowed on the following quotations:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores	$27·00 @ 28·00
" 2 " " " "	25·00 @ 26·00
" 1 Mill, " " "	23·00 @ 24·00
" 1 F'dry, from Alabama, Georgia and Tennessee Ores	25·00 @ 26·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores	24·00 @ 25·00
" 1 Mill, from Alabama, Georgia and Tennessee Ores	23·00 @ 24·00

HOT BLAST STONE COAL AND COKE.

No. 1 F'dry, from Hanging Rock Ores	$25·00 @ 26·00
" 2 " " " "	24·00 @ 25·00
" 1 Mill, " " "	23·00 @ 24·00
" 1 F'dry, from Alabama, Georgia and Tennessee Ores	25·00 @ 26·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores	24·00 @ 25·00
No. 1 F dry, from Missouri Ores	27·00 @ 28·00
" 2 " " "	26·00 @ 27·00
" 1 Mill, " " "	26·00 @ 27·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores	35·00 @ 40·00
" " Tennessee Ores	30·00 @ 33·00
" " Alabama and Georgia Ores	30·00 @ 35·00
Car Wheel from Kentucky Ores	28·00 @ 35·00

ST. LOUIS.

Messrs. SPOONER & COLLINS, Iron commission agents, 409 North Third street, St. Louis, under date of June 25, report the iron market as follows: Our market the past week has been quite dull, there being but little demand for Iron. Foundry Irons remain quiet, with some inquiry. Mill Irons dull. Car Wheel Irons very dull. We quote on 4 mos. time:

Mo. Stone Coal,	No. 1 F'dry.	$28·00 @ 29·00	—4 mos.
" "	No. 2 F'dry.	26·00 @ 27·00	—4 mos.
" "	No. 1 Mill	25·00 @ 26·00	—4 mos.
" Charcoal,	No. 1 F'dry	28·00 @ 29·00	—4 mos.
" "	No. 2 F'dry	26·00 @ 27·00	—4 mos.
" "	No. 1 Mill	25·00 @ 26·00	—4 mos.
Tenn. Charcoal	No. 1 F'dry	28·00 @ 29·00	—4 mos.
" "	No. 2 F'dry	26·00 @ 27·00	—4 mos.
H. R. "	No. 1 F'dry	29·00 @	—4 mos.
H. R. "	No. 2 F'dry	27·00 @	—4 mos.
H. R. "	No. 3 F'dry	26·00 @	—4 mos.
Massillon,	No. 1 Foundry	36·00 @ 37·00	—4 mos.
"	B, No. 1 Foundry	34·00 @ 36·00	—4 mos.
"	No. 2 Foundry	33·00 @ 34·00	—4 mos.
Cold Blast Car Wheel,	Mo.	37·00 @ 40·00	—4 mos.
" "	Tenn.	35·00 @ 40·00	—4 mos.
" "	Hanging Rock	53·00 @ 55·00	—4 mos.
Mo. Charcoal Blooms		75·00 @ 85·00	—4 mos.
No. 1 Wrought Scrap			1¼c. per lb.
Machinery Cast "			1c. "
Stove Plates			¾c. "

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of June 29: We have to report a dull and depressed market, and with no quotable change for the past week, with the exception of Horse and Mule Shoes, which have declined 75 cents per keg.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick	2·6-10 to 2 7-10c. ℔ lb.
1 to 4½ wide by 1¼ to 2 thick	
Round and square, ordinary sizes, from ⅝ to 2 inclusive	2 6-10 to 2 7-10c. "
Hoop Iron, 1½ wide and upward	4¼ to 4½c. "
Band Iron, from 1¼ to 4 in. wide	3¼ to 3½c. "
Horse Shoe Iron ⅜ to 1 wide by ⅜ to ⅝ thick	4 to 4½c. "
Norway Nail Rods	7 to 7¼c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	15½ to 16c. "
Machinery Steel	11 to 11¾c. "
Cast Spring Steel	10 to 10¾c. "
Homogeneous Steel Plate	10¾c. "
Perkins' Horse Shoes, per keg of 100 lbs	$4 87½
" Mule Shoes " "	5·87½

Common Horse Nails, from 14c. to 18c. per pound.

	10	9	8	7	6	
Putnam Horse Nails	23	24	25	26	28c.	per ℔.
Globe Horse Nails	10	9	8	7	6	
	23	24	25	26	28c.	per ℔.

R. R. Spikes 5¾ by 9-16 at 3c to 3¼c. per lb.

Messrs. R. C. HOFFMAN & Co., Iron and commission merchants, Nos. 23 and 25 South Frederick street, report the Pig Iron market as follows, under date of June 29: We have no change to note in the Iron market since our last report. We quote:

Baltimore Charcoal	$32·00 @ 35·00
Virginia "	30·00 @ 35·00
Anthracite No. 1	27·00 @ 28·00
" No. 2	25·00 @ 26·00
" No. 3	23·00 @ 24·00
White and Mottled	20·00 @ 22·00

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, June 13, 1875.—*Metals.*—The English failures have thus far produced no feeling of panic anywhere, and the metal trade at large has not been affected thereby. This is due, in a great measure, to the conservative spirit which has prevailed in trade circles for a year past, extreme caution being the watchword, both in England and on the Continent. It is due to the shunning of all over-trading, and the consequent ease in money matters. Speculation having been forced back within a narrow compass extravagant prices having ceased to rule, the failures alluded to have occurred during a period devoid of undue expansion, and, therefore, not liable to a sudden collapse. The framework of trade is no doubt sound at present in Europe, and eventually consumption, even in the Iron branch, will produce a favorable change. The process is a slow one, but it is all the safer. *Copper* has lacked animation during the week under review. The charters on the West Coast are on a moderate scale, yet speculators for a rise have abstained from operating for the general reasons given above, notwithstanding the well ascertained fact that the arrivals of Copper from Chili within the ensuing two months will be quite moderate—indeed, hardly sufficient to keep up an adequate supply, should trade in the metal become brisker. At all events, even but limited deliveries to consumption will suffice to reduce the available supply in England and France to a comparatively low ebb, and toward the middle of August speculators for a rise are likely to find a remunerative field for their labors. The Paris market continues languid in the extreme. We quote unaltered as follows: Chili Bars, 217·50 francs; English Tough Cake, 225; Common Chili Bars, 216·50; ditto Ingots, 228·50; and pure Corocoro Ore, 215. Nothing transpiring at Havre on the spot, where prices slowly follow the fluctuations of the London market. Copper is firm at Marseilles on the basis of 220 francs for Refined Ingots. *Tin.*—The previous week's improvement has been lost, and quite an uncertain aspect now intervenes, the result of speculative movements. It is difficult to surmise what the upshot will be. Here a decline has taken place. We quote Banca, deliverable at either Havre or Paris, 230; Straits, 217·50; and English, deliverable at either Havre or Rouen, 225. Tin is quiet at Marseilles, Straits and Billiton at 215, and English, 225. *Lead.*—The tendency has been an uninterruptedly downward one pretty much all over Europe, due principally to more liberal supplies from Spain. We have, consequently, been quite weak here. French, deliverable at Paris, 56 francs; Spanish, at Havre, 55. At Marseilles Lead has experienced a severe tumble in the absence of all export orders. Spanish is quoted there 51 francs. *Spelter* has remained quiet, but firm, in the London market, with rather an upward tendency. We have not varied here, and quote Silesian, deliverable at Havre, 63 francs; other good brands, 62. The Vielle Montagne Co. has raised the selling price of Sheet Zinc 5 francs the 100 kilos, and it now commands 80 francs in the Marseilles market, and all over France generally. *Iron.*—The critical period which French Iron industry is traversing for such a lengthened time past is, from all appearances, not yet at an end. A good many recent occurrences, however, point to a favorable change near at hand. Thus, a good many orders are dropping in in the Iron regions of France for a replenishment of stocks, in amounts sufficiently considerable to obviate the necessity of reducing list prices. Here, at Paris, the market remains quiet; orders are scarce, and there is great competition for them. In the St. Dizier district a good, steady business is transacting in Machinery, Hoops and Chains, likely to keep the works in that vicinity busy for some time to come. A business moderate in extent, yet satisfactory, is doing at the North; No. 2 Merchants' Bars we quote 209 francs. In the Meurthe and Moselle, at Longwy, affinage Pig commands 70 francs; at Nancy, 72·50; No. 3, 94; No. 1, 110. First-class Merchants' Iron, coke, is quoted 210 francs. The attention of the Minister of Finance has been called to certain surreptitious, fraudulent dealings in Pig Iron imported from Luxemburg, injurious both to the public exchequer and to French Iron masters. *Coal.*—The decline seems to have been excessive, and there is a tendency in Coal not to go lower for the present.

BELGIUM.

(Revue Universelle).

BRUSSELS, June 13, 1875.—*Iron.*—Stagnation in the Iron trade in Belgium is getting well nigh chronic. The only recent deliveries for railroad purposes have been between 500 and 600 tons Rails for the horse railroads of Antwerp, and 500 Railroad Cars for the State railroads. Continual efforts are being made by Belgian firms in the Iron and Machinery line to extend business relations to distant foreign countries; thus another merchant has left for Brazil and other portions of South America, yesterday. The Sclessin Society has been authorized to erect, in addition to the one recently constructed, three blast furnaces with hot air apparatus and other appurtenances. Prices of Pig and Wrought Iron remain weak, but have undergone no decline yet. A good deal of interest has been excited in Europe by the reports about the Danks mechanical puddling process, initiated at Cincinnati and Pittsburgh. It is expected that its introduction into South Staffordshire will soon become an accomplished fact, and that the Continent will be compelled to adopt the same system. *Coal.*—Very little transpires in this fuel, which has become unusually dull, owing to the season. The gradual decline has now lasted precisely two years. Since the reduction in wages in South Wales, Belgian Coal producers will have to make additional efforts by the introduction of labor saving machinery, to bring down the cost of Coal at the mines to a still lower figure.

GERMANY.

(Borsenhalle.)

HAMBURG, June 12, 1875.—*Metals.*—The general apathy in the German metal markets continues uninterrupted, nor do we expect much of an amelioration in this respect till after mid-summer, when the approach of the autumn campaign will induce the replenishment of supplies. *Copper* is weak in the absence of a demand for consumption, and quotations are but nominally supported. At Stettin, Copper is worth 105 marks; here we quote Drontheim, 94 marks; Lake, 100. About 10,000 pounds of old Yellow Metal have sold at 54 marks. *Tin.*—The recent improvement in Holland and England was, as is usually the case, received with a good deal of suspicion in the German markets, and the subsequent course of values in those countries has shown that it is not easy to uphold prices as long as the supply largely exceeds the demand. No change here. *Lead.*—There is no feature of special interest apparent. At Stettin, Spanish sells at 27 marks, German at 24. Here we are weak at 23·75 to 24 for German, and 25·50 to 26 English, while Spanish brings 25 to 25·50. *Spelter.*—The German markets, at the high figures demanded, show but little vitality. No transactions are reported from Breslau. Here the available supply is exhausted. We quote futures 24·50 marks, nominally. Stettin still keeps up the quotation of 27 marks.

RUSSIA.

(Golos).

MOSCOW, June 1, 1875.—*Iron.*—In 1866 there were in operation in Russia but 100 iron works, whose annual sales amounted altogether to 15,000,000 roubles, one-half of which employed steam. There are now 362 foundries and machine shops in full operation within the empire, 79 of which are exclusively devoted to turning out agricultural implements. Out of the 362 now extant, 179 employ altogether 46,285 operatives, and produce goods to the amount of 49,000,000 roubles per annum; 161 of them employ steam. In 1868 there were built in Russia but 222 locomotives, while in 1874, 768 were turned out. Out of 702 steamboats now navigating in Russian waters, 484 were built in this country. In spite of the activity thus displayed, Russia imported hardware to the amount of 2,000,000 roubles annually between 1850 and 1856, inclusive; upward of 8,000,000 annually between 1857 and 1864; upward of 13,000,000 between 1865 and 1868, and above 32,000,000 annually between 1868 and 1873. There are at present turning out rails exclusively four establishments, one of them the property of the State, one of Prince Demidoff, one of Mr. Putilow, and one of the Great Railroad Company of Russia.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, June 15, 1875.—*Tin.*—A little firmer again with sales of Banca, spot, at 50¾, and from the coming July auction at 50¾ guilders; Billiton, spot, 48¾.

EAST INDIES.

(Aitken, Spence & Co.)

COLOMBO, Ceylon, May 11, 1875.—*Plumbago.*—Lead of prime quality is almost unobtainable; the demand continues limited, and prices are unchanged. The Pandita is nearly loaded, and will sail early this week. Total export of Plumbago from Ceylon to all points since October 1: 66,415 cwts. against 109,227, 94,266 and 72,575 in 1874 and 1872. Great Britain thus far took 43,631; the Continent, 1448, and the United States, 21,336. *Exchange* has been declining. We quote: 1/19 7-16 to 1/10 9-16d. MAY 15.—The Pandita has sailed, taking 4619 cwts. for New York. The market closes quiet, but steady as follows: Lump, free on board, without freight, 320/ per ton; Chip, 180/, and Dust, 120/.

(Sandilands, Buttery & Co.)

PENANG, May 3, 1875.—*Tin.*—Owing to some demand for India, prices could at first be maintained at $22·50 per picul for unsmelted; however, continued unfavorable advices from home soon caused a decline, and since then small purchases were made at $22·50 to $22 per picul for unsmelted. Supplies have been unusually small, and the stock in the Bazaar does not aggregate more than 2000 piculs. *Exchange* slightly weaker at 4/3⅞d. to 4/3d.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From our Regular Correspondent.*)

SHEFFIELD, ENG., June 14, 1875.

THE TRADE OUTLOOK.

There is no material alteration in the actual state of trade, neither is the outlook brighter. The effect of the failures, detailed in my last communication, has very rapidly worn off, which, at least, shows that no further very heavy suspensions are looked forward to, and that matters are at so low an ebb that a further drop is hardly possible. I can, of my own knowledge, state that there have been several very narrow escapes from financial shipwreck; the rock on which two or three goodly vessels nearly split being "foreign investments." Some day before long I will take advantage of my position and inflict on your readers a pretty little tale—not fiction—as to the manner in which a number of English capitalists recently invested their monies in a foreign "countree," and got so dreadfully frightened that two or three of them very narrowly missed falling from the high social positions to which they had climbed through many years of hard and unremitting industry. It is an instructive story, and as the scenes happen to be laid in a certain district of the United States, and a town within a thousand miles from Sheffield, I will some day "the tale unfold." Returning to our metallic "muttons," I may say that the price of common and second-class finished iron is slightly lower, that rails are nominal, that tin plates are dull, that pig iron is considerable easier, that hardwares are quiet but steady, and that metals are apathetic.

HOW MUCH COAL HAVE WE?

It would appear that we have now a great deal more coal than we had according to the report made by the coal commission in 1870—that is, if we may credit certain statistics recently set forth at a meeting of the South Staffordshire Forge and Mill Managers' Association by Mr. Wm. Edwards, manager to John Bagnall & Sons (Limited). That gentleman's conclusions are that in the South Staffordshire district great quantities of coal will be available in consequence of the report of the Mines Drainage Commissioners, under a special act, and owing to the discoveries of coal in localities not before believed to contain the mineral. The Sandwell estate consists of 1000 acres of thick coal; Lord Calthorp's estate, of 1400; General Studd's, of 500 acres; the West Bromwich Colliery Company have 50 acres in the solid to get; the Sponlane Colliery Company have 50 acres of thick in the solid, and 60 acres of broken mine; the Blakeney-hall estate 70 acres in the solid to get; Earl Dudley's new colliery at Lye-cross has proved 500 acres of thick coal in the solid, 10 yards thick; Messrs. Hunt are getting thick coal in three pairs of pits, which in all range from 20 to 30 yards thick; the new coal fields in the Cannock Chase district, embracing an area of 93 square miles, have an average thickness of workable coal (above 2 feet thick) of 50 feet. Of this total about one-fourth has been got, and three-fourths, or 1,024,000,000 tons, remain to be gotten; while in 1870 it was estimated by the Royal Commission that there were only 968,000,000 tons to be gotten there. The district of North Staffordshire has an area of coal fields, exclusive of the Cheadle and Goldsitch basins, of 75 square miles, and the available weight of coal, at a depth of 4000 feet, is 3,720,000,000 tons. In 1870 this coal field yielded 3,873,512 tons of coal. The Cheadle coal field contains about 104,524,000 tons of coal available for future use, and the Goldsitch Trough is supposed to consist of 117,000 tons. Yorkshire, Derbyshire and Nottinghamshire are supposed to have of coal 900 square miles, and a total weight of 28,082 millions of tons. These fields in 1870 produced 17,824,241 tons. South Wales, in 1870, was supposed to contain 906 square miles of coal to 4000 feet depth, and it was calculated that this area would yield 31,783,000,000 tons of coal, and that if the rate of production of that year (13,664,112 tons) was kept up, the coal would last for more than 2300 years; and recently there have been extensive new discoveries. Scotland is supposed to have 9,843,465,930 tons of coal, and Durham 796 square miles of the mineral, weighing 7,452,250,000 tons. Shropshire, North Wales, Cheshire, Lancashire, Northumberland and Cumberland, with other countries, are found to contain more fuel than had been expected. The production of coal in Great Britain was in 1872 greater than in any previous year, being a total of 130,000,000 tons. Of the 178,000,000 tons known to have been raised anywhere during 1835, 100,000,000 tons were brought to bank in Great Britain. The capability of Great Britain to bring coal from the greatest possible depths was illustrated in the circumstance that already the deepest pit worked by a perpendicular shaft was in this country; it was the Arley pit, at the Rosebridge colliery pit, near Wigan, which, it was explained, goes down 2445 feet; the pit in Belgium, whence coal is being brought up from a depth of 4000 feet, being worked in three inclines, with as many engines.

BANKING AND DISCOUNTING.

The *Economist* has some comments upon the dangers of our banking system as applied to the discounting and rediscounting of "paper." It remarks that the Aberdare Company drew on the Plymouth Company, and these bills having been discounted by Sanderson & Co., were rediscounted at some of the principal banks. If due care had been observed, the *Economist* contends, this could not have happened. A careful scrutiny should have at once detected the unsound character of much of the Aberdare Company's paper. The extensive rediscounting should have been impossible. All banking, of course, rests on credit, which is in itself natural and right, but brings a risk with it which must be provided against. Our modern system of deposit banking is essentially a new thing, and, although we enjoy its advantages, we scarcely appear sufficiently alive to all its dangers. The Aberdare Company could not have been so largely supported by fictitious paper had our banks been as judicious as large.

THE SCOTCH PIG IRON MARKET.

The Scotch pig iron market was very inactive during the greater part of last week, and for a time a general listlessness prevailed. On several days there was only *one* transaction in warrants, which opened on the week at 59/6, but fell 2/ by Thursday, on the afternoon of which a little rally took place. The spurt sent up figures a shilling or so, but they are not strong at the rise, and a relapse may set in during to-day. There are now 121 furnaces blowing in Scotland out of a total of 190. The stock in Connal's stores on Friday night (and this morning) is 37,440 tons, beside what lies in the yards of the several makers. Freights to the principal American ports are as stated last week. Ballast pig iron has fallen to 53/ per ton, and some of the makers' special brands are easier. Writing from Glasgow June 11th (night), Messrs. James Watson & Co. said: "The pig iron market opened this week at 59/3, but receded to 57/9, cash, on Wednesday, closing firmer to-day at 58/9 buyers; sellers, 59/. Shipments last week were 8708 tons, against 5360 tons in the corresponding week of 1874.

	No. 1.	No. 3.
G. M. B., at Glasgow	61/	59/
Gartsherrie, "	65/6	62/
Coltness, "	66/6	63/
Summerlee, "	65/6	61/6
Langloan, "	64/	61/6
Carnbroe, "	62/	61/
Calder, at Port Dundas	65/6	62/6
Glengarnock, at Ardrossan	67/6	61/6
Eglinton, "	59/6	58/6
Dalmellington, "	60/6	59/6
Shotts, at Leith	65/	63/6
Kinneil at Boness	62/6	59/

Messrs. Wm. Colvin & Co. (Glasgow, June 15th) say: "The warrant market improved a little toward the close of last week, and business was done on Friday up to 59/. This week the tone has continued steady, the price ranging from 58/9 to 59/3, and closing this afternoon with buyers at 58/9, and sellers at 59/. The market for makers' iron has also assumed a more settled aspect, and there is little or no change in prices to report:

	Deliverable alongside. No. 1.	No. 3.
G. M. B., at Glasgow	60/6	58/6
Gartsherrie "	65/6	61/
Coltness, "	67/	63/
Summerlee, "	65/	62/
Langloan, "	64/	62/
Carnbroe, "	61/	60/
Monkland "	60/6	59/
Clyde "	61/	59/
Govan, at Broomielaw	61/	59/
Calder, at Port Dundas	65/	63/
Glengarnock, at Ardrossan	67/6	61/
Eglinton, "	60/	59/
Dalmellington, "	60/	59/
Carron, at Grangemouth, selected	70/	..
Shotts, at Leith	66/	63/
Kinneil, at Bo'ness	61/	59/
Bar Iron	£8. 10/ to £9. 10/	
Nail Rods	£9. 10/.	

SHIPMENTS.

	Tons.
Week ending June 12, 1875	11,625
" June 13, 1874	5,483
Increase	6,142
Total increase for 1875	52,536

Messrs. John E. Swan & Bros. (limited), prices current are:

Glasgow Brands.	Furnaces Blowing, 123	Furnaces Out 34.	Furnaces Built, 157.	Prices. No. 1.	No. 3.	No. 4
Gartsherrie	13	2	16	65/	61/	62/6
Coltness	12	0	12	67/	63/	..
Summerlee	6	2	8	65/	61/	62/
Langloan	7	1	8	63/	61/	62/
Govan	4	1	5	60/	59/	62/
Calder	6	2	8	60/	59/6	62/6
Shotts { Bess'mer / Ordinary }	5	2	7	85/	..	..
				65/	63/	62/
Carnbroe	4	2	6	60/	59/	62/6
Wishaw	2	1	3	..	..	..
Monkland / Chapelhall	8	1	9	60/	59/	60/
Clyde	6	0	6	60/	59/	59/6
Quarter-Clyde	4	1	5	60/	59/	59/6

* f. o. b. Glasgow, 1/ per ton, extra.

Glasgow Warrants, 3-5 No. 1; 2-5 No. 3, g. m. b., 58/9.

WEST COAST BRANDS—*f. o. b. Ardrossan.*

Glengarnock		7	2	9	67/	61/ 62/
Ardeer		4	1	5		
Eglinton	Brand'd	6	2	8		
Lugar		4	0	4		
Muirkirk		3	0	3	59/	57/6 60/
Portland	Eglint'n	3	3	6		
Dalmellington		6	2	8	61/	58/ 59/

EAST COAST BRANDS—*f. o. b. in the Forth.*

Kinneil		3	1	4	61/	59/ 59/6
Almond		2	1	3	62/	60/ 59/
Carron	Selct'd	5	1	6	67/6	.. ..
	Ordn'y				66/	.. ..
Lochgelly		1	3	4	60/	58/6 59/
Lumphinnans		0	2	2	..	.. ..
Bridgeness		0	2	2	..	.. ..

TRADES OF SHEFFIELD.

It was well known, as stated in my last week's letter, that a local concern, the Phœnix Bessemer Steel Company, limited, was a creditor for a large amount in the estate of Gilead Smith and Company. The fact was so soon established that the shares of the Phœnix Company began to be "knocked out" on the Stock Exchange, and so roughly treated that from 29 dis. they fell to 43 dis., the amount actually paid up being £40 per share. In the afternoon of the day named the directors, after several preliminary consultations, met and finally determined to go into liquidation. A circular was got out the same evening for issue to the creditors the next day stating this fact, and that owing to the heavy and unforeseen loss sustained by a London failure, the scheme of reconstruction, which was nearly complete, could not be carried through. The creditors, consequently, met at Sheffield on Wednesday, June 9th, with the result detailed below, and the shareholders will meet on Friday at Rotherham. The capital of the company is £100,000, of which £80,000 are paid up. The trade liabilities of the company were not precisely known, but were stated to be somewhat about £100,000. The works have been stopped in a great measure, 400 to 700 men being employed. At the meeting of creditors on Wednesday, however, an authoritative statement both of facts and accounts was given. Mr. Josiah Smith, manager of the Barrow-in-Furness Steel and Hematite Company, was voted to the chair, there being also present Mr. Jackson, Solway Iron Company, Maryport; Mr. Buckton, Leeds; Mr. Robinson, London, and gentlemen from Darlington, Manchester, Liverpool and other towns. The report read by the company's solicitor stated some of the foregoing facts, and in addition that Gilead Smith & Co.'s order was for 5000 tons of rails, 4500 of which had been sent off. The arrangement for these rails was that three-fifths of the payments should be made in cash and two-fifths in acceptances. Warrants had been issued for the quantity delivered, or held as per arrangement, and these had got into third hands, the present holders claiming that they had a lien upon them superior to that of the vendors. This will, of course, have to be decided by the court. The statement of accounts submitted gave the following details:

LIABILITIES.

Open accounts	£80,061	0	2
G. Smith & Co.'s acceptances, under discount	14,155	18	2
Mortgages and debentures	45,205	0	0
Total	£139,421	18	4

ASSETS.

Book debts	£30,023	0	0
Stock and tools	50,267	0	0
Cash and sundries	570	0	0
Uncalled up capital, estimated	17,000	0	0
	97,860	0	0
Deduct for secure creditors	13,000	0	0
Total	£84,860	0	0

After considerable discussion it was resolved that the affairs of the company would be best wound up by adopting a voluntary liquidation under the supervision of the Court of Chancery.

In addition to the case of the Phœnix Company, there were very ominous rumors in circulation here on Friday and Saturday last, as to the credit of certain other firms and persons said to have been involved in the recent failures, or by other circumstances. I have some pleasure, however, in stating that, although some concerns in this vicinity were creditors for heavy amounts with one London house a fortnight or so since, they "backed out" in time, having had early warnings from their London agents. Had this backward movement not been accomplished, the result would, I am afraid, have been far more disastrous than in the case of the Phœnix. I can also state, on most excellent authority, that the rumors which have for some time been in circulation here, may, and ought to, cease, seeing that there is no longer any ground for whispering in the one particular instance to which I allude. I also believe that in two or three other directions, unfair suspicions are being entertained, there being very little reason indeed for their propagation or existence.

A somewhat sensational story having been circulated by the newspapers as to an alleged, very serious fire having taken place at the new collieries of the Barrow Steel Company, at Worsboro', South Yorkshire, Mr. George E. Chapman, the company's colliery manager, writes to make several corrections. He states that the pit in which the fire took place is 324 yards deep, not 325 ft., and that during the last twelve days, prior to Thursday, the sinkings had passed through thin beds of Cannel coal which held gas, necessitating the use of safety lamps. On reaching hard spavin the shaft was bricked up and the flues were collected above the seams where the gas lodged in three 6 in. pipes, 24 ft. up the back side of the brattice boards. After firing a sump shot on Thursday morning, however, a flash of light was seen and a slight concussion felt, the lowest length of brattice being observed to be on fire. Water was at once pumped in, promptly extinguishing the blaze, and on Friday water drawing was commenced. Mr. Chapman believes that the fire was caused by a splinter from the spavin sent up by the shot striking and breaking one of the pipes, the liberated gas being ignited by coming in contact with the burning fuse.

At the Rockingham colliery of Messrs. Newton, Chambers & Co., great progress has been made since March last, when the shaft got on fire, a depth of 200 yards having now been reached.

Taken as a whole, trade remains in a very quiet condition, but there is a clearly more healthy tone than was apparent last week. The transactions on record are not numerous, and the lots of iron changing hands are not large, so far as pig and merchant irons are concerned, dispite the downward tendency of prices. Hematite pig irons are nominally quoted at the following figures: Maryport hematite, No. 3, 82/6; No. 4, 82/; mottled and white, 80/; Bessemer, No. 1, 85/; No. 2, 82/6; and No. 3, 80/ per ton, less 2½ for cash. Millom Bessemer, No. 1, 90/; No. 2, 87/6; and No. 3, 85/; ordinary, No. 3, 85/; No. 4, 83/; No. 5, 87/6 to 90/; mottled, 93/; and white, 88/, per ton on the usual terms.

There is a good inquiry for ship, boiler and armor plates, but very little new business in rails. Such orders as have recently been placed locally for steel rails have been at exceedingly bare prices, one concern being especially spoken of in the trade for its cutting propensities.

The cast iron industries are a little busier, there being a fairly good call for plough plates, wire, tool steel, and crucible steel castings.

The members of the various branches of the cutlery trades are very pleased to observe from the last Board of Trade returns that the United States are again buying the productions in which Sheffield is so largely interested, on a somewhat broader scale. Most departments are fairly well engaged but there is no pressure. Prices of good table cutlery are firmly maintained.

RAILROAD IRON EXPORTED.

The following figures, detailing the exports of railroad iron during the first five months of 1874 and 1875 respectively, had not reached me when I wrote last:

Railroad, of all sorts.

To	1874.	1875.
Russia	49,258	15,894
Sweden and Norway	28,296	18,518
Denmark	4,583	2,013
Germany	3,172	671
Holland	3,967	2,284
Belgium	13,216	406
France	739	45
Spain and Canaries	9,869	5,196
Italy	9,054	3,148
Turkey	6,784	28
Egypt	10,623	192
United States	52,445	13,888
Brazil	9,853	5,028
Peru	4,185	11,037
Chili	5,663	10,458
British North America	20,259	36,380
" India	22,662	14,464
Australia	32,217	36,299
Other countries	49,248	25,270
Total	335,093	201,219

SOUTH STAFFORDSHIRE AND BIRMINGHAM.

At the week 'change meeting, Wolverhampton, there were no very notable transactions either in pig or any description of finished iron. Common merchant iron could again be obtained at prices a shade under those current last week, but best brands of finished iron were upheld at the full list quotations. Best bars were, therefore, still £11, with an extra 12/6 for Lord Dudley's make. Good boiler plates from the establishments of makers whose productions are known to be of reliable quality, were fully £12. 5 to £12. 10. Sheets of No. 24 gauge and best quality were £11. 15, but a commoner description of singles might have been obtained at £11. 7/6. Common bars were in plentiful supply at £8. 5/ to £8. 7/6. At the Birmingham weekly 'change assembly a few specifications for finished iron were given out, but there was no weight of material transferred from sellers to buyers, or rather from possible sellers to nonexistent buyers. Prices were in the main very simmilar to those just given. In the hardware departments there is a tolerable amount of activity, but there is again a little talk of foreign competition. American curry combs, and even padlocks are spoken of as being in various markets at prices under those of the Willenhall makers, both classes of goods being admittedly equal in general get up and finish to the English articles.

SOUTH WALES.

The coal trade of Newport and Cardiff is now getting stronger, and the shipments are fast assuming their wonted proportions. At the Ebber Vale, Tredegar, Rhymney and Dowlais works iron is being made on a tolerably large scale, but there is no reason for supposing either that a large output will immediately follow, or that the existing quotations are sufficient to yield any profit. One of those courses must therefore be taken: the works must remain idle, coal must be lowered, or wages must again be reduced. That the demand will so revive as to solve the difficulty appears, at present, highly improbable.

THE METAL MARKETS

have been very quiet during the last week, no transactions of weight having taken place. Prices have been fairly firm, but there are generally drooping tendencies.

Messrs. Van Dadelszen & North say: The prevailing tone of the metal market during the past week has been one of great quietness, although prices show no change of any importance. The rate of discount remains at 3½ per cent. *Iron.*—The reports from the manufacturing districts are anything but cheerful, orders remain very scarce, and manufacturers would make concessions in price if orders of magnitude had to be given out. Scotch pig iron has fluctuated but little; the closing price to-day is 58/6. The shipments last week were 8708 tons, against 5360 tons for corresponding week 1874. *Copper* has ruled firm but quiet, and very little business reported. Chili bars remain at £82. 10/ for g.o.b. and £83 for named brands. Several cargoes of regulus have changed hands at 16/9 to 17/1½ per unit. Australian sorts quite neglected and nominal. English copper steady, but lifeless. *Tin.*—For a few days there was a good demand at advancing prices, but it has since given way again. The highest price for Straits was £85 cash and £84. 10/ for forward delivery, but it is now obtainable at £84 and £83 respectively. Australian, after touching £82. 10/, relapsed to £82 sellers. Banca remains at 50½, and Billiton 48fl. English without change, and in poor demand. Tin plates have further given way in price; large quantities of good ordinary coke are offering in Liverpool. Charcoal neglected. *Lead* has become dull, at a decline of 5/ per ton from last week's quotations. Good English pig, £22. 10/ to £22. 15/. *Spelter.*—Occasional transactions are reported in Silesian at £24 here for ordinary brands, and £24. 5/ to £24. 10/ according to brand. In outports English quite nominal. *Quicksilver*, £12 per bottle.

Messrs. Berger, Spence & Co's. report today, is: The iron market has been relieved of a good deal of its anxiety by the remarkable harmlessness of the recent failures. The atmosphere, it is true, is still anything but clear; rumors of new embarrassments, though still in their first vagueness, have not quite lost their power of pursuasion; but with all the probabilities of impending danger, there has nevertheless been a most cheering absence of anything like undue caution, and not a few of the late sales thereby developed into proportions which must have seemed hardly attainable a week ago. The change, though perhaps too manifestly momentary to bode any general and lasting improvement, may yet prove more than ephemeral in the Glasgow market. Scotch prices have shown rather less sympathy with the fluctuating warrants, and their comparative steadiness is, in our opinion, too well justified to inspire anything but confidence in their early recovery. The point they have now touched undoubtedly is the farthest stretch the present cost of labor can allow, and this fact, corroborated by the reduction of wages lately intimated by some of the iron masters, cannot but hasten the advent of a better demand. Middlesborough make, though not entirely neglected, has hardly, if at all, had any share in the amelioration. This, however, can scarcely be surprising in the presence of the last returns. The makers' stocks, which were 79,021 tons at the end of April, have since swelled into 101,491 tons, although the make remained stationary within 78 tons. *Copper* continues quite. Regulus, of which two cargoes were sold, realized 17/ and 17/ 1¼d. per unit. The charters for the last fourteen days of May represent 1900 tons of fine copper. *Lead* has been much steadier, the demand for consumption having been somewhat stronger. *Tin* was quoted rather higher at the beginning of the week, but the prices have since gradually receded, and are still tending downward. In *Spelter* moderate business has been done at former rates.

The *Mining Journal* remarks: "*Copper.*—The market opened firm at the beginning of the week for foreign copper, and business was reported in Chili bars, g. o. b., at £82. 10/ to £83, cash, and at the former price, with three months' prompt. Throughout the week there has been hardly any variation in quotations. The market has been quiet. *Lead.*—There has been very little activity presented in this market, and quotations are easy, in consequence of the slackness of the demand. Good soft English pig is readily obtainable at £22. 10/, and soft Spanish, without silver, £21. 15/. *Spelter.*—Silesian is quoted £24 to £24. 5/. The market is devoid of animation. *Quicksilver.*—There is no change in the value of this metal, transactions being reported at £12 per flask. *Tin.*—The market has assumed a very uncertain aspect, resulting from the action of speculators more than from any other cause, and being thus under the influence of speculation to a great extent, it is impossible to speak with any degree of assurance as to the ultimate course it may take. *Tin Plates.*—What support the market has obtained results from foreign shipments, and judging from the published returns, these have been satisfactory; but the make of tin plates is now so large that competition has driven the price down, and plates have been offered by one or two houses at a figure which is said by the majority of manufacturers to be utterly unremunerative.

Paints for Engineering Structures.

BY EARNEST SPOW.

After questions of form, strength, constructive material and similar matters have been duly settled in connection with any engineering work made of wood or metal, the engineer has to consider the best method of maintaining that work in good condition. Apart from working casualties, the material of which the particular work is constructed is exposed to atmospheric and chemical influences which tend more or less to modify and corrode its surface, and an artificial surface is therefore formed by applying paint. Most of the paints used for ordinary work are composed of the coloring matter, then of a quantity of white lead, with which and a particular oil they are worked into a paste of the shade required, and are afterward trimmed down with oil and turpentine when used. The white lead which thus forms the basis of most paints, and is by itself a color, is the basic carbonate of lead, a heavy earthy powder, white when first made, but soon becoming of a grey tint when exposed to the air, from the action of sulphureted hydrogen. It is insoluble in water and effervesces with hydrochloric acid, dissolving when heated, as chloride of lead, which crystallizes in needles on cooling. Dilute nitric acid easily dissolves white lead, with effervescence caused by the escape of carbonic acid gas. When heated on a knife or slip of glass it becomes yellow. It is not very generally known that white lead and oil combine with such energy that if linseed oil is poured upon a very large quantity of white lead, and the mass allowed to stand for a few hours, the temperature becomes so high that the oil is carbonized and colors the whole a black. We should carefully avoid mixing with white lead substances which may impair its brightness or depreciate its other qualities, and it should be kept in closed vessels, otherwise it will acquire a brown shade. For good paint it should be pure and without foreign mixture; however, both manufacturers and painters add to it variable proportions of chalk, sulphate of lead and the like, and it is often mixed with that sulphate of baryta which is called baryta white, and which is prepared from the native sulphate, or from carbonate of baryta artificially treated with sulphuric acid. Baryta white is an adulteration which ceases to be objectionable when the manufacturer makes the composition known, as it is of a handsome white color, entirely innocuous, fast and resisting most reagents; its great defect being that it possesses but little body or covering power. The manufacturers sell various qualities of white lead, sometimes in powder or in lumps, as genuine dry white lead, or flake white, but the greater portion in a paste, holding from 7 to 9 per cent. of oil. Krems, Nottingham and Newcastle whites are pure lead, differing only in the way in which they are made, Venice white is a mixture of equal parts of white lead and sulphate of baryta. Hamburg, Holland and other whites contain from 3 to 60 per cent. of sulphate of baryta, and inferior qualities large proportions of chalk. White lead paint is solid and durable, but the disagreeable vapors given off by the lead exercise a dangerous effect upon the health of the workmen who are engaged either upon its manufacture or its use.

Many substitutes have been tried to obviate the employment of white lead; zinc white in particular has received considerable attention, it has not such a bad effect upon the health, having no smell of itself, and does not impart any to the liquids with which it may be mixed, so that any place freshly painted with it may be at once inhabited without fear of its injuring the occupants. Zinc white is the oxide of zinc; it is insoluble in water, but dissolves in hydrochloric acid, usually effervescing slightly from the escape of carbonic acid, which oxide of zinc absorbs from the air. When heated, oxide of zinc becomes yellow, but resumes its white color on cooling. It is as brilliant, white and fine as white lead, and becomes on drying so hard that it will take a bright polish, it does not alter under the destructive action of sulphurous vapors, or of gas with equal weights; it covers a larger surface than carbonate of lead, but it is very dry under the brush, and therefore requires more labor in applying it, which, to a great, extent explains the disinclination to use it, spite of all the efforts made in its favor. It also takes longer in drying, and when adulterated is very liable to change color.

Red lead, so largely used by engineers, is an oxide of lead, usually in the form of a bright red powder, which is not affected by water, but evolves the smell of chlorine when boiled with hydrochloric acid, and is slowly converted into chloride of lead. Dilute nitric acid only partly dissolves it, leaving a brown powder. On account of its durability, it is frequently used as the priming coat, often the only coat given, on iron work. Care should be taken that no salt is present, otherwise a chemical action commences, blisters are formed, and the lead is reduced to the metallic condition. It has been proposed to substitute for red lead a red obtained from a sulphide of antimony, termed antimony vermillion, which is sold in a state of very fine powder, without taste or smell, and which is insoluble in water, alcohol or essential oils. It is but little acted on by acids, and foreign engineers state that when ground in oil it acquires great intensity or brightness of color, that it has a good body, is unalterable by air or light, and may be freely mixed with white lead. Black paints made from the residual products obtained in distilling coal and shale oils are largely employed for rough work. They combine readily with drying oils, and give an intense and handsome black, which is at the same time very economical. Native oxide of iron has of late years supplied us with a paint which possesses many of the good qualities of red lead without its inconveniences. Oxide of iron paints are most effective and durable paints to use on iron, as they have no tendency to change or affect the surface of the metal. An analysis of one of these paints gave—peroxide of iron, 68·95; aluminous earth (clay), 1·48; burnt clay, 29·57; total, 100·00. The purple-brown oxide is a hydrated peroxide of iron, Grant's black is made of shale containing iron, and the well-known Torbay paint is a protoxide of iron. Under equal volumes iron paints cover more than those from lead; mixed with one-third of white lead it forms an excellent mastic, similar to that made from red lead, and which becomes very hard after drying for some time. As the iron oxide paint resists a strong heat it is advantageously employed for painting parts of machines and boilers. The so-called anti-corrosive paint is made of equal parts by weight of whiting and white lead, with half the quantity of very fine sand or road dust, with colors at pleasure. The mixture being made with water can be used as a water color, but it is usually applied as an oil paint. The preparation of oil recommended for this purpose is 12 parts by weight of linseed oil raw, 1 part of boiled linseed oil, and 3 parts of sulphate of lime, the whole well mixed. One gallon of oil thus prepared is used to 7 lbs. of the paint. Paints containing silica have been used for both wood and metal; they give a hard surface, which is very durable; it is stated that when mixed with proper oils they will resist the action of salt water or acids better than iron or lead paints, that they cover well, and that in the case of wood they form a considerable protection against fire. In addition to the pigments mentioned, which are in themselves colors, various tints are produced by additions of ochres, earths naturally colored by iron; chromes or yellows, consisting of oxide of lead and chromic acid; blues, such as Prussian blue, from animal refuse burnt with potash and iron; smalts, from oxide of cobalt; ultramarine blue, from carbonate of soda, silica, alum, and sulphur; or greens, from oxides, carbonates, and arsenates of copper.

(To be continued.)

Manufacturing Charcoal.

A correspondent of the *Country Gentleman*, Simon Hunt, of Tolland county, Connecticut, gives a useful article on charcoal making:

The manufacture is not difficult; and one of good common sense will soon acquire the art without much instruction. The ground

selected for burning should be level, free from stones or other inequalities, reasonably near water, protected from high winds by hills or groves, but not shaded, as a good moon or starlight is a great convenience in burning. September and October are the best months to burn, as the days are not too hot nor the nights too cold.

Having selected the ground, the first thing is to cut and draw the wood, which can be most easily done in winter. Any kind of wood will answer, except that wood which is gummy or pitchy, or that holds fire long, is more difficult for a new hand. Cut and split the wood like cord wood, but the first tier may be five feet long. The blocks and pieces from saw logs will all work in on the top of the pit and make as good coal as any.

The wood should be seasoned as long as from winter to September. When ready to set up, make a box about four inches square as long as the hight of the pit. Two opposite sides should be pointed to stick into the ground in the center of the pit; the other two sides should not reach within one foot of the ground, care being taken to have the bottom of the box a trifle the largest (as the pit is fired in the center through this box), so that any coal or brand put in at the top is sure to go down and not lodge. When setting the wood, one or two men should hold the box in position, and for the first tier set the wood around the box, putting a few kindlings and light wood at the bottom.

When once started, put the largest end of the wood up, as the brands will then be smaller and less to reburn, and the bottom will then be looser and the top tighter, as they should be. Set each stick so if it stood alone it would fall toward the center, gradually drawing out the bottom, so that when done the pit is at an angle of nearly 45 degrees, so that the earth will lie on. When the first tier is well started, commence the second, if the pit is large, in the same way, only put the small end up, and with a little pains it will get the right slant. If the pit is small the second tier may be started nearly flat, putting the large end toward the center, with a few short pieces to start with. The small wood should be reserved for the outside, cutting it short and packing it close to prevent the covering of earth from rattling in.

When ready to burn, and the moon has just passed its first quarter, cover the pit with green coarse hay or weeds, cut while the dew is on, if convenient; if not, coarse dry litter will answer; then cover with earth six inches, leaving from four to six air holes at the bottom. In covering, commence at the bottom. When ready to fire, start a fire on the ground of hard wood; when burned to coals, drop a shovelful down through the box. When well started, having the wood and earth ready, fill the box with wood, driving it down with a pole, and cover the top with litter and earth. Keep the top tight so that the smoke will pass off at the air holes on the bottom.

If it burns too fast and blazes, which it ought not to after getting a start, give less air; if too slowly, more air. As it burns around the center first and shrinks, it must be fed or filled with wood, or the earth will not lie on. As smoke and steam rise, the fire is soon driven down to the lowest part of the pit, and will be drawn through to the outside, usually burning a narrow channel, and shrinking so that wood must be put on to keep the earth up. The fire will then work round until it has been over the whole pit, leaving brands from one to two feet or less. No process that I know of will induce the fire to burn longer. All that is necessary while burning is to regulate the draft and keep the pit tight by stamping and settling it down as it burns, and throwing on earth when required. While the pit is burning, the steam and smoke keep the covering moist; when burnt, the earth is dry like ashes, and one cannot walk upon it. As the fire in burning, reaches the outside, the fire-brands should be hauled out with a rake or hoe, and the fire smothered, by commencing at the bottom and taking out all bits of unburnt wood or litter, stones and sods raked out of the covering, the earth must be made fine and thrown back on to the pit; the pit smoothed over with a rake, and kept tight by throwing on earth, and raking, if fire or smoke appear.

When the whole pit has been in this condition about forty-eight hours, it is ready for commencing to draw the coal. This is done by shoveling in at the bottom, throwing the covering higher up on the pit; the brands are to be betten and thrown farther back, the coal raked from the earth and spread with iron rakes with long teeth. If any fire appears, put it out with water, using some convenient vessel with a small spout. The earth should be thrown back immediately; then rake the pit with a long tooth rake, bringing the pit to a slant of forty-five degrees, or as steep as the earth will lie on; when this spot is finished, move on, and so go round the pit. It is very important to keep the pit covered as much as possible in order to smother the fire. The brands are to be reburnt, setting them with the burnt end down. The coal should lie on the ground over night, and be closely watched, as it takes fire easily and burns rapidly. It takes from two to two and a half cords of wood to make one hundred bushels. To burn a pit of ten to twelve hundred bushels requires eight to ten or twelve days, according to a variety of circumstances.

Roman Aqueducts and Baths.

In a lecture lately delivered by Rev. H. G. Spaulding, in Boston, we find the following:

Rome was the city of fountains, formerly containing no less than 13,000, and has to-day nearly 700. The Roman aqueducts marked the transition in Rome from a mere village to a stately capital. The first one was built in 312 B. C., and called the Appian. It was almost subterranean, and extended nearly five miles outside the city. In 293 B. C. the Anio was constructed, and reached from springs in the Sabine Mountains to the city, a distance of 42 miles.

Most of the aqueducts entered the city near the Porta San Maria Maggiore. The Anio Novus and Claudian aqueducts were finished in 52 A. D., by Emperor Claudius, the length of the former being 62 miles. These two aqueducts united their channels in the Campagna, and to-day their picturesque ruins are seen extending for a distance of more than six miles over the desolate fields outside the Aurelian walls. When all the aqueducts were in operation in Rome (in the imperial epoch) the supply of water for the city must have been 50,000,000 cubic feet in 24 hours, more than ten times the actual supply of London for the same time. Thus can be seen how important was the water supply of Rome. The Romans of the republic had numerous swimming places owned by individuals, who charged an admission fee, as well as many private baths, before the great thermæ, or public baths for the whole body of citizens, were erected. The first thermæ were built by Agrippa, and others by Titus and Trajan, but the great thermæ were those of Caracalla and Diocletian. Those of Caracalla covered an area of 150,000 square yards, a space equal to Boston Common, and combined in one vast establishment such institutions as would answer to our libraries, reading rooms, lecture halls, base ball grounds, race courses and gymnasiums. There were seats for 1600 in the baths of Caracalla, and twice as many in those of Diocletian. The ruins of the former were more extensive and more impressive than any other ruins not excepting the Coloseum—in imperial Rome. Of the great thermæ of Diocletian, some of the spacious halls with vaulted ceilings were preserved in the churches of San Maria degli Angeli, designed by Michael Angelo, and San Bernado, which were built in those baths. In these half christianized edifices one is reminded of a remark of Taine that "Much of what is called christianity in Rome is only a thin veneering of christianity laid over the old paganism." The nymphæ were grottos of pleasure houses attached to the residences of wealthy Romans. The so-called "Grotto of Egeria," on which Byron wrote three of his elaborate verses, supposing it to be the veritable haunt of the Egeria of King Numa's time, is now ascertained to be merely a nymphæum belonging to a suburban villa.

Recent excavations have uncovered a station of the Roman Fire Bridge, a very interesting relic of old Rome. The Roman firemen were organized under Augustus, with a force of 12 cohorts of watchmen, each of 700 men. Their stations must have been palaces, judging from the building which has been exhumed, in which the rooms were gracefully ornamented, and the courts richly paved.

In presenting views of the excavations now progressing so slowly in the baths of Caracalla, the lecturer suggested that the citizens of Boston or of Massachusetts, who valued so highly even a fragment of statuary from old Rome, should make an offer to the Italian government to excavate these ruins, receiving as compensation the spoils that were no doubt buried under the debris, and thus by infusing a little Yankee energy into the excavation, confer a benefit upon the world as well as ourselves.

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No. 1, weight	16 lbs.,	cuts	⅜x2	inch, or	½	inch round or square	.....Price	$25·00
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MILLERS FALLS CO.—Enclosed find draft for amount of invoice, January 7. We would have sent the amount before, but did not have an opportunity of trying the Iron Cutter until a few days ago. It is one of the best machines we ever saw. Yours, truly, MOORE & CO.

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Truly, yours, R. NICKERSON, Agent.

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Barber Self-Fitting Bit Braces, Millers Falls Vises,
Improved Angular and Ratchet Drilling Machines,
TUBE SCRAPERS, FAMILY TOOL CHESTS,
Patent Adjustable Tool Holders, Mitre Boxes, Ratchet Braces, Breast Drills, etc.

The New Double Screw Parallel "Leg" Vise.

We are now ready to furnish, as the result of more than thirty years' experience, our latest style of Vise—the best yet made. It is stronger than any other, whether of Foreign or of American make; always parallel and holding with a tighter "grip." The jaws are of convenient shape for the workman to get near his work equally well for filing or chipping, instead of the heavy, clumsily formed jaws of the cast iron Single Screw Vises of the common "parallel" type, and which, depending upon slides alone for preserving parallelism, can never be screwed up very hard without "jamming" on the sides or breaking.

Our New Vise combines all the advantages of the "Peter Wright" Leg Vise, of strength and lightness, fastening to the floor and bench, and at the same time greatly superior to it; is always perfectly parallel at all points of opening, and never gets out of line. Embodying the same general principle as the well known Chain Vise, so long made by us, we have by new, scientific proportioning of all the parts, and with our recently improved metals for their manufacture, obtained so perfect a tool, that we now *warrant* these Vises for *three years* from date of manufacture stamped upon each.

The Jaws are of best Tool Cast Steel, welded on, file cut and properly hardened. The screws are forged of the best refined iron, and work in *solid cut thread* boxes.

The lower screw maintains the parallel position of the two jaws, by having exact motion with the upper working screw through the connecting chain which regulates it.

The chain is very accurately made of steeled links and rivets, and having no strain of the work upon it, is therefore as durable as all the other parts.

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" 5,	" 7	in. x 1½		in.	"	1⅞	in.	"	"	24 in. " " 9 in. 30 00
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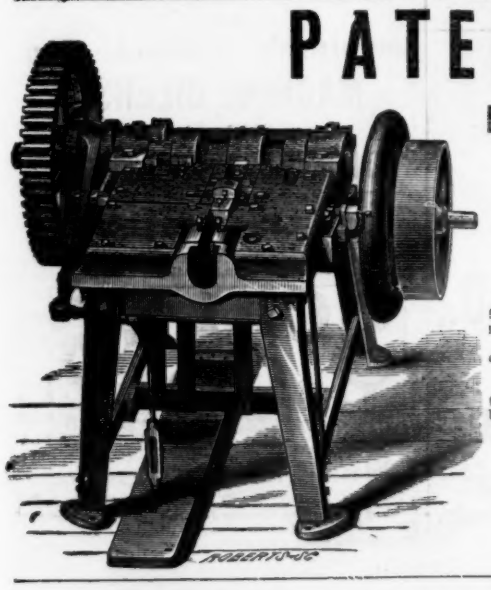

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No. 1 will make bolts from ½ inch down.
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The three sizes if run together would require from 2 to 2½ horse-power.

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A Boy can learn to run it in a few hours. The bolt is made on the heated bar and cut off in the machine to any length from 1 to 10 inches; if greater lengths are desired, they should be cut before heating. Either Round or Square Iron may be used.

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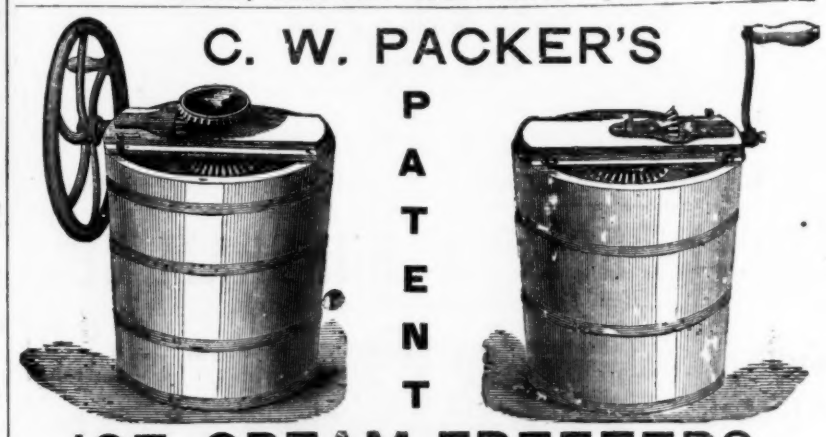

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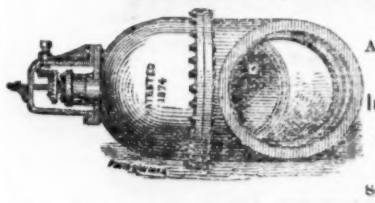
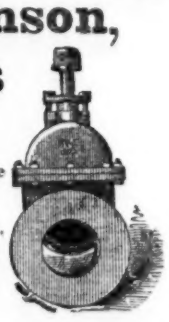
Manufacturers of

PATENT STOP GATES

For Water, Gas and Steam,





From 2 in. to 50 in. diameter.

Also, **Fire Hydrants, Single and Double Nozzle.**

Improved Boiler Feeders, Etc.

Cor. Park Way & Sandusky Sts., ALLEGHENY, PA.

Send for Circular.

MAGENS & CO.,

73 Third Street, Louisville, Ky.

Representing MORRIS, TASKER & CO., Philadelphia, Pa.

Manufacturers of

Wrought Iron Pipe, Lap Welded Boiler Tubes, Gas and Steam Fitters' MATERIALS of all kinds.

Agents for Blake Steam Pump, Shive Governor, Utica Steam Gauge and Keystone Portable Forge. We handle only M., T. & Co.'s Tube, which we guarantee to be of standard weight. Every length stamped with the trade mark of M., T. & Co. Send for Catalogue and Prices.

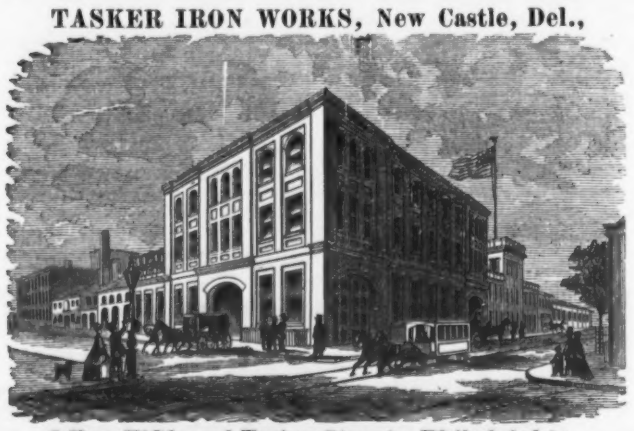
Pipe, Fittings, &c.

Thomas T. Tasker, Jr. Stephen P. M. Tasker

MORRIS, TASKER & CO.,

PASCAL IRON WORKS, Philadelphia,

TASKER IRON WORKS, New Castle, Del.,



Office, Fifth and Tasker Streets, Philadelphia.

Office and Warehouse, No. 15 Gold Street, New York.

Office and Warehouse, No. 36 Oliver Street, Boston.

MANUFACTURERS OF

WROUGHT IRON WELDED TUBES,

Plain, Galvanized and *Rubber-Coated*, for Gas, Steam and Water.

Lap-Welded Charcoal Iron Boiler Tubes.

Oil Well Tubing and Casing, Gas and Steam Fittings, Brass and Steam Fitters' Tools, Cast Iron Gas and Water Pipe, Street Lamp Posts and Lanterns, Improved Coal-Gas Apparatus, Improved Sugar Machinery, Etc.

BAILEY'S PATENT ADJUSTABLE PLANES.

IRON AND WOOD. 30 different styles.. 90,000 ALREADY IN USE.

Smooth Planes,
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Block Planes,
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Carpenters,
Cabinet Makers,
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All Use them

[No. 9½ Excelsior Block Plane, $2 00.]

Manufactured by the **STANLEY RULE & LEVEL CO.,**

Factories: **New Britain, Conn.** Warerooms: **35 Chambers Street, New York.**

Ecton Mills Genuine London TURKEY EMERY.

TRADE MARK.

COPYRIGHTED IN THE UNITED STATES. ECTON MILLS SELECTED TURKEY EMERY ABBOTT & HOWARD SOLE AGENTS.

ABBOTT & HOWARD, Agents for the United States.

81 John Street, New York. 35 Oliver Street, Boston.

EATON, COLE & BURNHAM CO.,

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MANUFACTURERS OF

Wrought Iron **PIPE,** Cast Iron FLANGED PIPE, **Cast Iron** RADIATORS and BOILERS.

Brass & Iron **STEAM** Gas & Water FITTINGS. PLUMBERS' MATERIALS.

STEAM GAUGES, TOOLS,

And all Supplies used by Machinists, &c.

TRADE PAGE'S PATENT MAY. 8. 1866. MARK

HOUSE ESTABLISHED, 1862.

GEORGE S. FALES,

SUCCESSOR TO

FAIRBROTHER & FALES

Sole Owner and Manufacturer of

Page's Patent Lace Leather,

And Manufacturer of

OAK BELTING,

Also, Picker or Moccasin Leather, for Boot and Shoe Packs.

Angular Belting and Pullies made to order.

PAWTUCKET, R. I.

Ask for Star Stamped Lace Leather.

New Patent "X" Razor Strap.

PATENTED DECEMBER 23, 1873.

This Strap, designated on our List as Letter "X," is of novel construction—is elastic, pleasantly yielding to the razor—gives a keen fine edge—is made of superior stock—is furnished at a low price—**and gives universal satisfaction.**

☞ ITS PRICE SELLS IT. ☜

BENJAMIN F. BADGER, Sole Manufacturer,

Badger Place, Charlestown, Mass.

Pipe, Fittings, &c.

WROUGHT IRON

INDESTRUCTIBLE ENAMELED PIPE

For Water, Gas, Sewage & Soil Pipe.

Manufactured Solely by

NATIONAL TUBE WORKS CO.,

Also Lap Welded Steam & Gas Pipe & Boiler Tubes.

Tubing & Casing for Artesian, Oil & Salt Wells (with Patent Protecting Coupling).

A Specialty made of Large Wrought Iron Lap Welded Tubes, 8 in. to 14 in. diameter.

MACK'S PATENT INJECTOR, ETC.

Works and Offices at BOSTON, MASS., and McKEESPORT, PENN.

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BRASS COCKS

For STEAM, WATER and GAS.

Wrought Iron Pipe & Fittings, Plain and Galvanized

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WROUGHT IRON PIPE

FITTINGS, BRASS & IRON VALVES & COCKS

TOOLS & STEAM FITTERS SUPPLIES &c.

PIPE CUT & FITTED TO PLANS FOR MILLS &c.

CONTRACTORS

FOR HIGH & LOW PRESSURE STEAM HEATING APPARATUS FOR ALL CLASSES OF BUILDINGS.

Send for Illustrated Catalogue.

WM. ESTERBROOK,

Wholesale Manufacturer of

Coal Hods,

FIRE SHOVELS, Etc.

311 Cherry St., PHILADELPHIA.

CAST IRON PIPES

FOR WATER AND GAS.

Branches Retorts, &c.

Warren Foundry & Machine Co.,

PHILLIPSBURG NEW JERSEY.

GEORGE BARNES & CO.,

Manufacturers, Syracuse, N. Y.

ENCAUSTIC TILES.

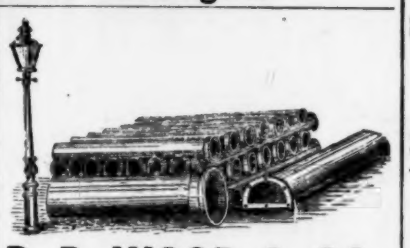
ALEXANDER FINDLAY,

Importer.

99 MAIDEN LANE, N. Y.

Sole Agent in the U. S. for

CRAVEN, DUNNILL & CO., (Limited.)



R. D. WOOD & CO.,

Philadelphia,

Manufacturers of

Cast Iron Pipe

FOR WATER AND GAS.

Lamp Posts, Valves, &c.,

Mathew's Pat. Anti-Freezing Hydrants.

400 CHESTNUT STREET.

Chapman Valve Mfg. Co.,

STEAM VALVES,

Iron and Composition, of all sizes.

WATER and GAS Gates, 3 to 48 inches

HYDRANTS.

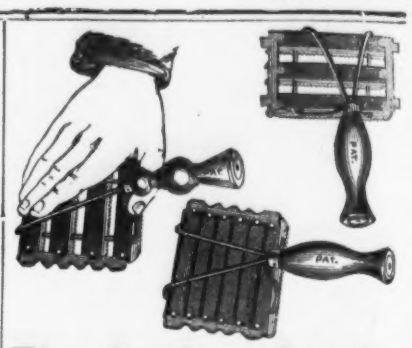
Office and Warehouse, 75 & 77 Kilby St., Boston, Mass

TURNED MACHINE SCREWS,

One-sixteenth to five-eighths diameter.
Heads and points to sample.
IRON, STEEL and BRASS.

Lyon & Fellows Mfg. Co.,

Cor. 1st and North 3d Streets, Williamsburgh, N. Y.



The Perfect Comb.

We call your attention specially to our new patent endless wire frame comb. The result of a long series of experiments, made with a view to meeting all the requirements of a *Perfect Comb*. It is better, stronger, and more durable than any ever before invented. The raised wire shank gives what has never before been attained, viz: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while using the comb. The wire braces which run from the shank over the back to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers in connection with the raised shank the comb is more firmly, easily, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name: **The Perfect Comb.**

THE LAWRENCE COMB CO.

Factory and Office,

382 2d Ave., cor. 22d St., N. Y.

WILLIAMS WHITE & CHURCHILL

Successors to

MACKRELL & RICHARDSON MFG. COMPANY

Manufacturers of

Builders' Hardware,

Locks, Hinges, Hooks and Staples,
Awning Hooks, Meat Hooks, Pincers,
Champion Noiseless Pulleys,
CHAIN PULLEYS &c.

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WM. S. CARR & CO.

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Patent Water Closets,

PUMPS,

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Factory, Mott Haven, New York.

J. AUSTIN & CO.,

168 Fulton Street, N. Y.,

Proprietors and Manufacturers of

WHEATCROFT'S SELF-ADJUSTING

Pipe Wrench,

AND

Scripture's Funnel Top MACHINE OILERS.

Dealers in

STEAM AND GAS FITTERS TOOLS.

RIEHLE BROTHERS,

Ninth Street, near Coates, Philadelphia.

New York Store, 93 Liberty Street.

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"Patented" Furnace Charging Scale.

Double Beam R. R. Track Scale, Compound Parallel Crane Beams, &c. Patented First Power Lever Wagon Scales. Testing Machines any capacity.

The Iron Age Directory

and index to Advertisements.

Petroleum in Iron Manufacture.

The following concerning the use of petroleum as a fuel for iron making is from the *American Exchange and Review:*

"It is now almost universally conceded that the proper form of fuel to be used in the manufacture of metallic substances is the gaseous one, to obtain which various apparatus have been patented for volatilizing coals with the aid of steam and air in retorts, and other contrivances, and carry the gas fuel thus produced to the furnace chamber for combustion. Various and great advantages are claimed for this method of working, prominent among which are greater intensity of heat (consequently, more work done in a given time), changing the character of the fire and the regenerate principle of producing intensity of blast. In carefully studying the subject, and from a practical investigation of it, we find nothing of merit in the coal gas or carbon oxygen, for that cannot be claimed for the petroleum or hydro-carbon; yet many points to be condemned in the former do not exist in the latter. First, a coal gas fire must be run continually to be economical, while a hydro-carbon need not. Second, all coal contains more or less sulphur, which, volatilizing at a low temperature, and coming in contact with superheated steam, forms sulphuric acid, which tends to destroy the nature of any metallic substances except the more precious ones, a disadvantage which the petroleum fuel does not contend with, being practically free from deleterious substances; so when we say that the hydro-carbon flame is pure and gentle, we mean it in its strictest sense, and that it is equal, if not superior, to charcoal, in this respect, at least. In all manufacturing interests, the quantity of work done per man or furnace is a great desideratum; but this must not be done at the expense of the quality, which, in the same market, must always take precedence. Thus, a ton of iron, wrought from coals filled with sulphur and other deleterious ingredients, can never compete with that worked with the unadulterated flames of hydrogen and carbon, provided the cost is equal; but if the hydro-carbon can be shown to be the cheaper, a capable manufacturer could not hesitate in making a choice. To give a practical illustration of the foregoing assertions, the English government, desirous of producing the best rolled iron armor for its iron clads, has ignored the English coal gas furnaces, and is rolling these plates at Woolwich arsenal with American petroleum."

The mechanical ingenuity of Andrew Fleming, a blind man, who lately died at Glasgow, deserves a brief notice. Fleming, whose age at the time of his death was about forty-four, was born in the neighboring town of Paisley, and learned the trade of a molder whilst working at the Phœnix Iron Works, Glasgow. Some years ago he lost his sight by an accident, and was admitted into the Glasgow Asylum for the Blind. It was in this institution that his remarkable faculty for inventing and constructing machinery was developed, his object being to make appliances which could be worked by blind persons, thus obviating the necessity of employing ordinary workmen to perform the labor. The first result of his ingenuity was a cropping machine, used to trim the brush mats manufactured at the asylum. This is fitted with four revolving knives and one stationary, placed at such an angle that they act as shears. The head upon which these knives are placed moves gradually along the face of the mat—the machine having two motions, one of which provides motive power to the rollers upon which the mat is placed, and the other being a horizontal movement, propelling the head of the knives along a grooved shaft. The work now effected by this machine, managed by a blind person, was formerly done by a person gifted with sight at a much slower rate, the instrument used being an ordinary pair of shears. Fleming's next machine is for boring brushes, and is an adaptation of the vertical principle of boring, and although it cannot be used for all the purposes required for boring brushes, yet much of the work is accomplished by its means, and it has the additional recommendation of being under the control of a blind person. An appliance for boring the rims of riddles comes next in order, and this not only answers its purpose well, but is a practical proof of Fleming's mechanical skill. A short time previous to this event he was engaged in constructing the model of a machine to supersede the hand labor in an important branch of riddle making.

The *National Oil Journal* says: There is little doubt that the gas escaping constantly from oil wells is of nearly or quiet as much value as the oil itself; and it is a matter of wonder that means have not long since been adopted to utilize this immense product of the earth. No estimate can be made of the quantity of this gas, which has for years been allowed to pass away into the air uselessly; but the yield of a few gas wells which have been tubed and their product utilized, indicates that it is enormous. A gas well near Sarversville, in the Butler oil region, flows with a pressure of 300 pounds to the square inch, and is roughly estimated to yield a million cubic feet of gas every 24 hours; and this is only one of quite a number of large gas wells, and almost number less small ones, for it must be remembered that every well which produces oil also yields gas. A survey has just been completed for a line of pipe from Sarversville to Pittsburgh, a distance of about 17 miles. It is proposed to lay a six inch pipe between the points named, and to supply the gas to manufacturing establishments as a substitute for coal for fuel in Pittsburgh.

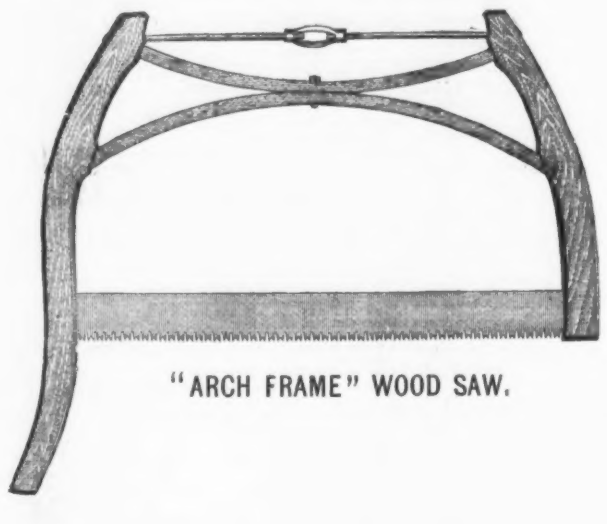
Operations at Barree Forge have been indefinitely suspended since the death of Mr. Mumper. The heirs are not of age and the legal representatives refuse to proceed. This throws over 200 employes out of work.

HENRY DISSTON & SONS,

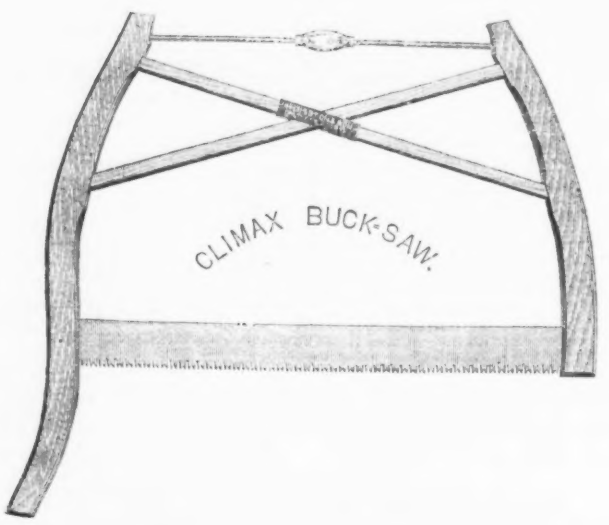
Keystone Saw, Tool, Steel and File Works.

Front and Laurel Streets, Philadelphia.

Branch Works, Tacony, Philadelphia. **Branch House, Randolph & Market Streets, Chicago, Ill.**



"ARCH FRAME" WOOD SAW.



DISSTON'S WOOD SAW FRAME.

Celebrated Our

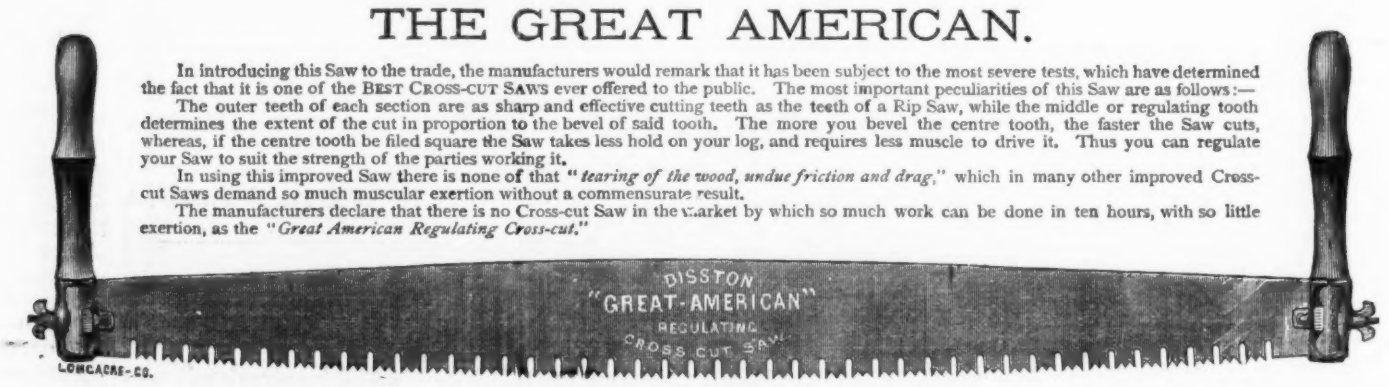
THE GREAT AMERICAN.

In introducing this Saw to the trade, the manufacturers would remark that it has been subject to the most severe tests, which have determined the fact that it is one of the BEST CROSS-CUT SAWS ever offered to the public. The most important peculiarities of this Saw are as follows:—

The outer teeth of each section are as sharp and effective cutting teeth as the teeth of a Rip Saw, while the middle or regulating tooth determines the extent of the cut in proportion to the bevel of said tooth. The more you bevel the centre tooth, the faster the Saw cuts, whereas, if the centre tooth be filed square the Saw takes less hold on your log, and requires less muscle to drive it. Thus you can regulate your Saw to suit the strength of the parties working it.

In using this improved Saw there is none of that "*tearing of the wood, undue friction and drag*," which in many other improved Cross-cut Saws demand so much muscular exertion without a commensurate result.

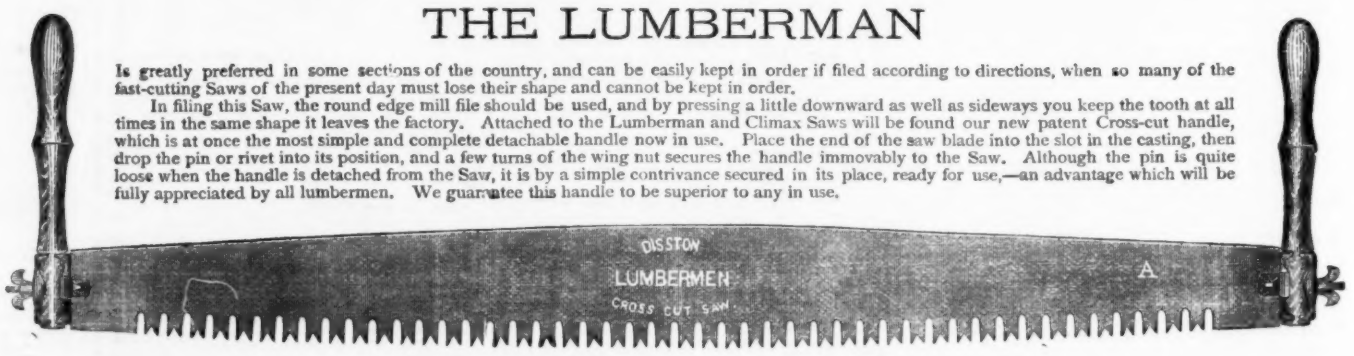
The manufacturers declare that there is no Cross-cut Saw in the market by which so much work can be done in ten hours, with so little exertion, as the "*Great American Regulating Cross-cut.*"



THE LUMBERMAN

Is greatly preferred in some sections of the country, and can be easily kept in order if filed according to directions, when so many of the fast-cutting Saws of the present day must lose their shape and cannot be kept in order.

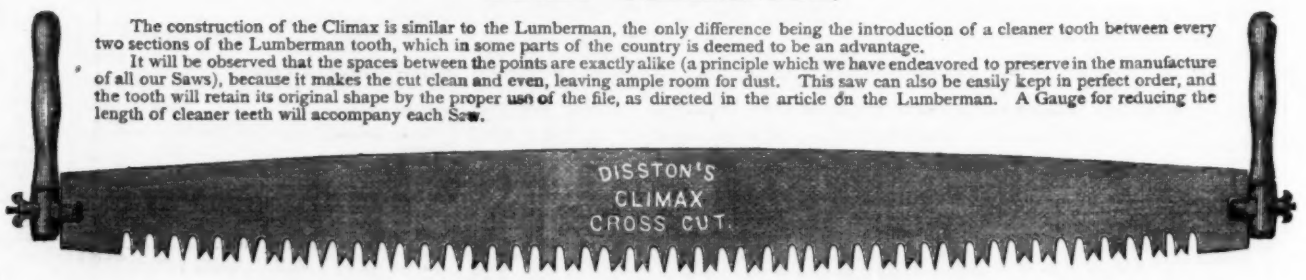
In filing this Saw, the round edge mill file should be used, and by pressing a little downward as well as sideways you keep the tooth at all times in the same shape it leaves the factory. Attached to the Lumberman and Climax Saws will be found our new patent Cross-cut handle, which is at once the most simple and complete detachable handle now in use. Place the end of the saw blade into the slot in the casting, then drop the pin or rivet into its position, and a few turns of the wing nut secures the handle immovably to the Saw. Although the pin is quite loose when the handle is detached from the Saw, it is by a simple contrivance secured in its place, ready for use,—an advantage which will be fully appreciated by all lumbermen. We guarantee this handle to be superior to any in use.



THE CLIMAX.

The construction of the Climax is similar to the Lumberman, the only difference being the introduction of a cleaner tooth between every two sections of the Lumberman tooth, which in some parts of the country is deemed to be an advantage.

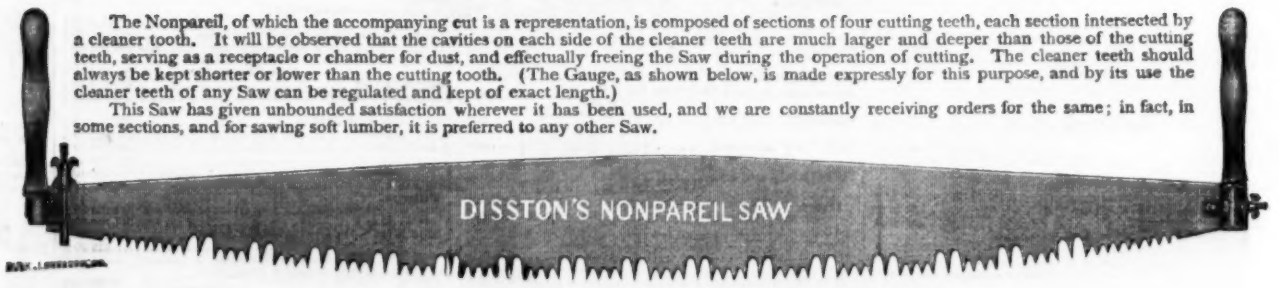
It will be observed that the spaces between the points are exactly alike (a principle which we have endeavored to preserve in the manufacture of all our Saws), because it makes the cut clean and even, leaving ample room for dust. This saw can also be easily kept in perfect order, and the tooth will retain its original shape by the proper use of the file, as directed in the article on the Lumberman. A Gauge for reducing the length of cleaner teeth will accompany each Saw.



THE NONPAREIL.

The Nonpareil, of which the accompanying cut is a representation, is composed of sections of four cutting teeth, each section intersected by a cleaner tooth. It will be observed that the cavities on each side of the cleaner teeth are much larger and deeper than those of the cutting teeth, serving as a receptacle or chamber for dust, and effectually freeing the Saw during the operation of cutting. The cleaner teeth should always be kept shorter or lower than the cutting tooth. (The Gauge, as shown below, is made expressly for this purpose, and by its use the cleaner teeth of any Saw can be regulated and kept of exact length.)

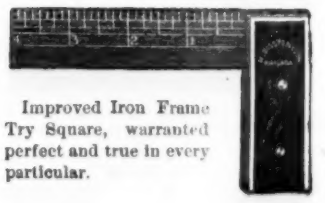
This Saw has given unbounded satisfaction wherever it has been used, and we are constantly receiving orders for the same; in fact, in some sections, and for sawing soft lumber, it is preferred to any other Saw.



CROSS-CUT SAWS.

Improved Pruning Saw and Knife, Patented August 29, 1873.

Gauge for Regulating Cleaning Teeth.



Improved Iron Frame Try Square, warranted perfect and true in every particular.

New York Wholesale Prices, June 30, 1875.

HARDWARE.

Anvils.
Solid Cast Steel ⅌ ℔ 14c
Wright's ⅌ ℔ gold 11c; over 250 ℔s 11¼c, gold
Armitage's Mouse Hole gold 11c
Wilkinson's ⅌ ℔ gold 11c
Eagle Anvils ⅌ ℔ 8c

Apple Parers.
Domestic, Turn Table, Lightning, Hudson's, Reading, Union — $7.75 ⅌ doz
Skeleton Paring, Coring and Slicing $8 00 ⅌ doz net
Bay State, Paring, Coring and Slicing $15 00 dis 10 %
Climax Slicer 8 00

Augers and Bits.
Douglass, Ives, Beecher (French, Swift & Co), Griswold, Challenge — 1st quality dis 40&10 %
Nobles Mfg. Co. dis 40 @ 40&5 %
Cook's d's 40&10&10 %
Snell Mfg. Co. dis 22½ @ 25 %
Jennings' Bits dis 10 %
Lewis' Single Twist Bits dis 30 %
Andrews' Bits dis 25 %
Griswold's Patent Bits dis 20 %
Expansive Bits, Clark's small, $18; large, $26—dis 15 %
" " Ives' $30 @ $30—dis 30 %
" " Blake's $30—dis 40 %
Hollow Augers, Douglass', Ives', French, Swift & Co. — dis 40 %
" " Bonney's Adjustable ⅌ doz $48—dis 25 %
" " Stearns' ⅌ doz $48—dis 25 %
" " Ives' Expansive each $4 50—dis 40 %
" " Universal Expansive each $4 50—dis 10 %
Gimlet Bits—Screw, $7 50; no screw, $9 dis 20&10 %
Double Cut Gimlet Bits, Shepardson's dis 20 %
" " Hartwell's dis 50 %
" " Douglass' dis 20&10 %
" " Ives' dis 30 %
Morse's Bit Stock Drills dis 20 %
L'Hommedieu's Ship Augers dis 15 @ 20 %
Watrous Ship Augers dis 15 %
Vaughan's Post Hole—
6 in. $23 00; 7, 8 and 9 in. $25 per doz dis 20 %

Awls, Brad Sets, &c.
Awls, Sewing per gross $1 20—dis 10 %
" Shouldered Peg per gross 2 25—dis 10 %
" Patent Peg per gross 60—dis 10 %
" Shouldered Brad per gross 2 25—dis 10 %
Brad Sets, Aiken's dis 25 %
" Nos. 42 and 43 dis 35&10 %
" Clark's dis 30&10 %
" Stanley's Excelsior $18 50—dis 25&10 %

Axes.
Brook's per doz $12 00 @ 14 00 net
Blood's per doz $15 00 @ 16 50—dis 20 %
Hunt's ⅌ doz $12 50 @ 14 00
Collins' ⅌ doz 11 00 @ 15 50 net @ dis 5 %
H. Clark's (J. C. W. & Co.) bron'd or red. ⅌ doz $10 00 net
Hurd's ⅌ doz 10 50 @ 12 50
Simmons' ⅌ doz 11 00 @ 11 50
Morris' ⅌ doz 12 50 @ 13 50
Red Jacket ⅌ doz 12 00 @ 12 50
Mann's ⅌ doz 11 50 @ 13 00
Double Bitted ⅌ doz 21 50 @ 22 00
Underhill's ⅌ doz 12 00 @ 13 00
" Crown ⅌ doz 12 50 @ 13 50
John Leverett's ⅌ doz 12 50 @ 15 50
Ten Eyck ⅌ doz $10 50 @ 12 50 net
M. H. Jones & Co. ⅌ doz 10 50 @ 12 50 net
Nobles Mfg. Co. per doz $10 50, net

Balances dis 35 %

Bands.
Plated new list dis 50&5 %
Iron Rim new list dis 25&5 %
Brass (Plated list) new list dis 50, 10&5 %
Oroide new list dis 50&5 %

Bells.
Hand, Light Brass dis 70&5 @ 70&10 %
" Extra Heavy dis 40&10 %
" White Metal dis 50&10 %
" Silver Chime dis 15&10 %
" Swiss dis 25 %
" Globe (Cone's Patent) dis 15&10 %
Gong Abbe's dis 15&10 %
" Yankee dis 30&10 %
" Barton's dis 33⅓ %
Crank, Taylor's dis 25 %
" Brook's dis 50 %
" Cone's dis 10 %
" Connel's dis 50&10 %
Lever, Sargent's dis 50&10&10 %
" Taylor's dis 25 %
" Hart, Bliven & Mead Mfg. Co dis 50&10 %
Pull, " " " " dis 50&10 %
" Brook's dis 50 %
" Western dis 25 %
Cow—Common Wrought dis 20&10 %
" Western dis 20&10 %
" " Sargent's dis 50&10&10 %
" Kentucky "Star" dis 20&10 %
" " Sargent's dis 50&10&10 %
" Dodge's Genuine Kentucky, new list—

Nos.	0	1	1½	2	3	4	5	6	Hog.	
	$12 00	10 00	9 00	8 00	6 00	5 00	3 50	2 50	5 00	dis 45 %

" Yaw's Genuine dis 30 %
" Texas dis 35 %
Call dis 15 %

Bellows.
Blacksmiths' dis 20 %
Moulders' dis 20 %
Hand Bellows dis 10 %

Blind Adjusters.—Domestic ⅌ doz $3—dis 20 %

Blind Fasteners.
Mackrell's dis 30 %
Van Sand's, No. 2000, $14 00; No. 3705, $10 50 net
Washburn's Patent ⅌ gross $14 00 net
Merriman's new list net

Blind Staples.
Boardman's Patent, ⅜ in. and larger ⅌ ℔ 37 c
" " ⅝ in " 42 c

Blocks.
Tackle, Rope and Iron Strapped, Providence Tool Co.'s list dis 30 %
Burr's dis 10 %
Stanley Rule and Level Co. dis 25&10 %

Bolts.
Cast Iron Barrel, Shutter, &c. dis 60&10 %
Cast Iron Chain dis 60&10&10 %
Wrought Iron Barrel dis 50, 10&10 %
" " Square dis 50, 10&10 %
" " Shutter dis 60&10 %
Wrought Iron Flush, Stanley's dis 15&10 %
" " " Sargent's dis 50&10&10 %
Carriage and Tire, Common dis 75 %
" " " Norway Iron dis 50&10 %
" " " R. B. & W. (old list) dis 60 %
" " " Philadelphia, Star dis 55 %
" " " " Eagle dis 55 %
Union Nut Company, old list dis 60&10 %
Stove dis 25 %
" R. B. & W. dis 25 %

Borax 15c. ⅌ ℔

Boring Machines.
Kellogg's dis 15 %
Snell Mfg. Co., Rice's Patent dis 20 %
" " Regular dis 20 %
Douglas Mfg. Co. No. 5, $3 25; with Augers, $5 00 net
No. 2, 4 00 " " 6 00 net
Pair's dis 30&10 %
Phillips' Angular, complete with Augers each $7 25
Mortising Machines, $20 00 each dis 20 %

Bow Pins.
Union Nut Co. new list dis 50&10&5 %
Hotchkiss' dis 50 @ 55 %
Humason, Beckley & Co.'s dis 50&10&5 %
Sargent & Co.'s dis 50&10&10 %

Braces.
Barber's Patent dis 40&5 %
Q. S. Backus dis 40&10 %
Wilson Mfg. Co. dis 10 %
Spofford's Patent dis 50 %
Noble's Patent dis 40&5 %
Ives Novelty dis 40&7½&10 %
" Hamden dis 15&10 %
Common Ball dis 15&10 %

Brackets.—Shelf dis 60&10 @ 65&10 %

Bright Wire Goods dis 65&10&10 %

Bull Rings.—Union Nut Co., new list dis 50&10&5 %
Sargent's dis 60&10 %
Hotchkiss' 2½ in., $2 25 net

Bung Hole Borers.
Common and Ring dis 20&10 %
Ives' Tap Borers dis 10&10 @ 25 %
Enterprise Mfg. Co. dis 20 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co dis 20&10 %
Bradley's dis 25 %
Beatty's dis 20 %

5	6	7	8	9
$30 00	$33 50	$36 50	$40 00	
				dis 45&10 %
3	4	5	6	
$25 25, $29 75, $34 25, $28 75	$43 25	$48 50	$54 00	

Butts.
Wrought Brass dis 30 %
Cast Brass dis 20 %
Common Cast, not Drilled.
Fast Joint, Narrow new list, dis 30&10 %
" Broad " dis 40&10 %
" " Jap'd dis 35&10 %
Loose Joint, Narrow and Broad dis 50&10 %
" " " Jap'd dis 45&10 %
Parliament Butts and Mayer's Hinges dis 40&10 %
Loose Pin, all kinds dis 45&10 %
Drilled and Wired.
Fast Joint, Narrow new list, dis 25&10 %
" Broad " dis 35&10 %
" " Jap'd dis 30&10 %
" " " with Acorns dis 30&10 %
Loose Joint dis 45&10 %
" Jap'd dis 25&10 %
" " with Acorns dis 40&10 %
Parliament and Mayer's Hinges dis 35&10 %
Loose Pin, all kinds dis 40&10 %
Wrought Iron.
Fast Joint, Narrow, Lt. and Regular dis 30 %
" Broad dis 35 %
Loose Joint Narrow and Broad dis 35 %
Table Butts, Back Flaps, &c. dis 30 %
Inside Blind, Regular dis 30 %
" " Light dis 40 %
Loose Pin, Wrt. dis 35 %

Am. Spiral Spring Butt Co., list May 1st dis 20 %
Union Spring dis 20 %
Blind Butts, Parker dis 60 @ 60&10 %
" Palmer dis 40 %
" Seymour dis 55&10 %
" Shepard dis 60 @ 60&10 %
" Lull & Porter dis 60 %
" Nicholson dis 45&10 %
" Huffer dis 33⅓&10 %
" Garretson, No. 1 dis 60 @ 60&10 %
" Clark's, Nos. 1, 3 and 5 dis 60 @ 60&10 %
" Clark's No. 4 dis 60&10 @ 65&10 %
" " Nos. 2, 4, 4½, 6, 8, 10 dis 40 %

Caps—Percussion, per 1000.
G. D. 37 @ 40c
Ely's E. B. 1-4s, 58c.; 1-10s, 70c. gold
" Double Waterproof, 1-4s, $1 45; 1-10s, $1 52½c., gold
Colt's 1-10s 80c gold

Carpet Sweepers.
Union each $2 75 net
Welcome each 2 75 net

Cartridges.—Metallic dis 50&10 %

Cards.—Horse and Curry dis 30&10 %
Cotton dis 10&10 %
Wool dis 15&10 %

Carpet Stretchers.
P. S. & W. per doz $2 00; dis 40&5 %
Sargent's per doz $2 88—dis 50&10&10 %

Casters.
Bed dis 30&10 @ 40 %
Plate and Shallow Socket dis 40&10 %
Deep Socket dis 33⅓ %

Cattle Leaders new list dis 60&10 %

Chain.
English Coil net gold

⅌ ℔	11¼	8¾	8¼	7¾	7½	7¼c
	3-16	¼	5-16	⅜	7-16	½

Trace, 6½-10-2 by the cask, ⅌ pair, gold 56c
Trace, 7-10-2 by the cask, ⅌ pair gold 62c
German Halter Chain dis 20 % gold
German Coil dis 20 % gold
Galvanized Pump Chain ⅌ ℔ 13c
Jack Chain, Iron dis 50&10 %
" Brass dis 40&10 %

Chalk.
White ⅌ gross, 57c net
Red ⅌ gross, 90c net
Blue ⅌ gross, $1 00 net
White Crayons ⅌ gross, 16½c net

Chisels.
Socket Framing, Douglass, Extra dis 60&10&10 %
" " Crossman dis 50&15&10 %
" " Buck Bros. equivalent to dis 50&15 %
" " Hart Mfg. Co. dis 60&10 %
" " Merrill dis 60&10 %
" Firmers, Douglass, Extra dis 60&10 %
" " Crossman dis 50&10&10 %
" " Buck Bros. equivalent to dis 50&15 %
" " Hart Mfg. Co dis 60&5 %
" " Merrill dis 60 %
Socket Corner dis 60&10 %
Tanged Firmers dis 40&10 @ 50 %
Butcher's $5 50 to £ gold
Newbould's $5 50 to £ gold
Spear & Jackson's $5 50 to £ gold
Buck Bros (Shank) $5 50 to £ gold

Clamps.
Cabinet dis 60&10 %
Gray's dis 20 %
Lambert's dis 20 %
Providence Tool Co. dis 10 %

Clips, Axle.
Norway or Best dis 40 %
Superior dis 50 %
"Star." Superior Philadelphia dis 45&5 %

Coal Shovels.
Edgar's Pat. "Gem," Short and Long H'dled dis 15 %
Iron Handled ⅌ doz, $ 85 @ 1 25
Wooden Handled ⅌ doz, 1 00 @ 2 00

Coal Hods.—Smith, Burns & Co. dis 15 @ 25 %

	14	15	16	17	18 incn.
Japanned	$6 00	6 25	6 75	7 50	8 00 per doz.
Galvanized	9 50	10 00	10 75	11 50	12 50 "

Morning Glory Funnel Hods—

No.	15	16	17
Japanned	$9 00	10 50	12 00 per doz
Galvanized	12 00	14 50	16 00 "

Sidney Shepard & Co.'s new list dis 10 %

Cockeyes 1¼ in., 28c.; 1½ in., 33c.; 1¾ in., 37c. net

Cocks.
Brass Racking dis 33⅓ %
Lock and Globe dis 33⅓ %
Lever Bibbs dis 33⅓ %
Ale and Beer dis 20&10 @ 25&10 %

Coffee Mills.
Board and Box dis 15 @ 20 %
Increase Wilson's dis 20 %
Selsor's Pat. $9 50, $10 50—dis 25 %
American (Enterprise Mfg. Co.) dis 20 %
French Steel dis 15 %
The Swift dis 35 %

Compasses and Dividers.
Bemis & Call Co.'s dis 35&10 %
Cook's dis 15 %
Excelsior dis 30 %
Peck Stow & Wilcox dis 25 %
Miller's Patent dis 25 %

Coopers' Tools.
Bradley's dis 15 @ 20 %
Chas. E. Little dis 20 @ 25 %
Swan & Brombacher dis 15 @ 20 %

Corkscrews dis 25 %

Corn Knives and Cutters.
Bradley's dis 10 %

Crow Bars.
Cast Steel ⅌ ℔ 11c. net
Iron, steel points ⅌ ℔ 6c

Crucibles.—Gautier & Co. ⅌ No. 5½c

Curling Irons, &c.
½, ⅝, ¾ in., $1 80, $2 00, $2 40 dis 10 %
Curling Tongs ⅌ doz $6 50—dis 15 %
Pinching Irons ⅌ doz 7 50—dis 20 %

Curry Combs.
Hotchkiss' & Kellogg's, Iron & Brass, old list dis 30&10 %
Fitch's (List of No. 240, $1) dis 20&10 %
Rubber ⅌ doz, $9 00—dis 15 %

Curtain Pins.—Silvered Glass old list dis 52½ %

Cutlery.
American Table { Meriden } New list Jan. '75, dis 25 %
American Pocket { Cutlery Co } dis 25 %
Am. Pocket—Humason & Beckley Mfg. Co. dis 20&10 %

Dippers.
Britannia per doz 7 50—dis 30 %; by bbl. dis 33⅓ %
Cocoa, Plain per doz $3 25—dis 30 %
" Rimmed per doz 3 75—dis 30 %

Dog Collars.
Embossed Gilt dis 20 %
Leather dis 20 %
Brass dis 25 %

Door Springs.
Gray's $7 50 ⅌ doz—dis 50&10 %
Torrey's Patent $7 50 ⅌ doz—dis 55 @ 55&10 %
Johnson's per doz $3 00 @ 4 00
Palmer's Japanned No. 6 ⅌ doz $5 00
" Coppered " 6 00 } dis 20 %
" Silvered " 9 00
Challenge.—
Japanned No. 9, per doz $4 00
No. 7, " 5 00 } dis 40 %
No. 6, " 6 00
Gem.—No. 1 large, Japanned per doz $4 00
No. 2 medium per doz 3 50 } dis 10 %
No. 3 small per doz 3 00
Barker's Concealed dis 12½ %

Drawing Knives.
Crossman's No. 1 dis 50&15&10 %
Douglass, Extra dis 60&10&10 %
Hart Mfg. Co., No. 1 dis 60 %
Merrill dis 60&10 %
Nobles Mfg. Co. dis 15 %
Bradley's dis 25 %
Adjustable Handle dis 15 %

Drills and Drill Stocks.
Blacksmiths' each $2 60 net
" Self-Feeding each $8 00 net
Breast, P. S. & W. dis 45 %
" Miller's Falls dis 25 %
" Aiken's dis 40 %
" Hotchkiss' dis 10 %
" Wilson's dis 10 %
Ratchet, Merrill's dis 20 %
" Ingersoll's dis 35 %
" Whitney's dis 20 %
" Weston's dis 20 %
" Moore's Triple Action dis 20 @ 25 %
Wilson's Drill Stocks dis 10 %
Automatic Boring Tools each $2 75—dis 20 %

Drill Chucks.—The Danbury each $10 00, dis 20 @ 25 %
Beach Patent (Morse) dis 15 %

Egg Beaters.
Monroe's 8 in. 10 in.
Per doz $8 00 9 00 dis 10 %
Dover ⅌ doz $6 00—dis 10 %
National ⅌ doz $4 50—dis 20 %
Peerless ⅌ doz $4 00—dis 10 %

Emery.
Genuine Chester—Regular Nos. ⅌ ℔ 6c } dis 10 %
" Flour and FF ⅌ ℔ 4c
Washington Mills—Regular Nos ⅌ ℔ 8c
" Flour ⅌ ℔ 5c

Enameled and Tinned Ware.
Kettles dis 30 @ 40 %
Sauce Pans dis 25 %
Glue Kettles dis 20 @ 25 %
Tinned Saucepans dis 25 %

Escutcheons.
Door Lock Same discounts as Door Locks
Brass Thread dis 60&10 %
Wood dis 25 %

Faucets.
Fenn's dis 50 %
" Cork Stops dis 40 %
Star dis 55&10 %
Frary's Patent Petroleum dis 15&10 %
Taylor's Pattern dis 20&10 %
Wood and Metallic dis 40 %
Wood, Cork Lined dis 60&10 %
Enterprise Mfg. Co., Self-Measuring dis 25 %

Felloe Plates ⅌ ℔ 15c; dis 25 %

Files.
American File Co. $5 00 to £ currency—dis 15 @ 20 %
Auburn File Co. $5 00 to £ currency
Nicholson new list, Jan. 1, 1875, net
Hartford File Co $5 50 to £ currency—dis 10 %
L. B. Heller & Co. $5 00 to £ currency
Heller & Bros $5 00 to £ currency
"Western" 5 00 to £ net
Rothery's $5 to £ currency
Black Diamond $5 to £ currency, dis 10 %
J. & Riley Carr 5 25 to £ gold
" " Horse Rasps 5 50 to £ gold
Stubs' 8 50 @ 9 00 to £ gold
Butcher's 5 25 to £ gold
Walter Spencer & Co.'s "Diamond" 5 00 to £ gold
Spear & Jackson's 5 00 to £ gold
Jowitt's 5 00 to £ gold
Newbould's 5 25 to £ gold
W. K. & C. Peace's "Imperial" 5 25 to £ gold
R. Ibbotson 5 00 to £ gold
Turton Bros. & Matthews $5 50 to £ currency
Ashworth's (Van Wart & McCoy) $5 00 to £ cur. dis 10 %
Fisher's 4 75 to £ gold
Goodlad's 4 00 to £ gold
Moss & Gamble 5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.) 5 00 to £ gold
" " Horse Rasps 5 25 to £ gold
"Philo Sheffield," P. T. Co. 5 00 to £ gold
Limet & Co. (French) 5 00 to £ gold

Fluting Machines.
Mrs. Coles' Pony, 4 in., $4 75; 5 in., $5; 6 in., 5 50; 7 in., $6
Knox, with 4-inch Rolls 4 15 each net
" " 6 " 4 50 each net
" " 8 " 6 75 each net
O. K. 6 50 each net
Peerless, 4-inch Rolls 4 00 each net
" 5 " 4 75 each net
Excelsior, No. 1 4 75 each net
" No. 2 6 50 each net
Diamond 7 50 each net
Champion, 6 inch rolls $6 00 each net
" 4 inch rolls $5 00 each net
Climax 7-inch Rolls 8 00 each net
" 4½ " 6 50 each net
Empire 4 00 each net
Eureka, No. 1, 7-inch Roll 8 00 each net
" No. 2, 5-inch Roll 6 00 each net
K. F. M., 4½-inch Roll 5 50 each dis 15 %
" 6-inch Roll 6 00 each dis 15 %
Myers' Fashion Fluter, 4½-inch Rolls 2 75 each net
" Convex Brass Fluter, Sad Iron attachment $1 75
Domestic Fluter $1 50 each net
Fairy, Self-Heater 00 each net
Geneva Hand Fluter $15 00 per doz net

Fluting Scissors dis 25&10 %

Forges.
Empire" (W. P. Kellogg & Co.) dis 20 %

Forks.
Hay, Manure & Spading dis 33⅓ %
Plated A 1 dis 50 %

Fry Pans.
Burnished, P. S. & W., new list dis 45 %

⅌ doz	$3 00	3 75	4 25	4 75	5 25	6 00	7 00	8 00	9 00
No.	0	1	2	3	4	5	6	7	8

Smith, Burns & Co., "Excelsior" Polished dis 35 %

⅌ doz	$3 70	4 00	4 70	5 30	6 00	7 00	8 00	9 00
No.	1	2	3		5	6	7	8

Gas Stoves.
Tifft & Howard dis 20 %

Gauges.
Marking dis 4½&10 %
Wire dis 10 %
" Smith's Patent per doz $18 00, dis 40 %

Gimlets.
Nail and Spike dis 25&10 %
Double Cut, Shepardson's dis 20 %
" " Ives' dis 25 %
" " Douglass' dis 20&10 %

Grind Stone Fixtures
Sargent's Patent dis 65&10 %
Reading Hardware Co. dis 70&10 %
J. F. Green & Bro. dis 40 %
Hart Mfg. Co.'s dis 60&5&10 %

Hammers.
Emmet Hammer Co.'s Handled dis 25 %
" " Sledge & Stone ⅌ ℔ 25 @ 30c net
Humason & Beckley Mfg. Co. dis 16⅔&10 %
Maydole's, new list dis 5 @ 7 %
Cheney's net
Verree dis 5 %
Yerks & Plumb dis 12½ %
Magnetic Tack dis 25&10 %
Warner & Noble's dis 10 %

Hand Cuffs and Leg Irons.
Tower's Hand Cuffs, $4 00 per pair } dis 25 %
" Leg Irons $6 50 per pair
Providence Tool Co.'s Hand Cuffs $15 per doz } dis 10 %
" " Leg Irons 25 "

Handles.
Door or Thumb Latches—

Nos.	0	1	2	3	4
Per doz	$0 80	1 00	1 18	1 35	1 50—dis 60 %

Roggin's Latches 40c. @ 50c. net
Bronzed Iron Drop Latches per doz $1 30 net
Wrought Chest dis 60&10 %
Surface Chest dis 65&10&10 %
Flush Chest dis 60&10&10 %
Lifting dis 60&10 %
Coffin dis 50&10 @ 60&10 %
Saw and Plane dis 20&10 %
Hammer and Hatchet dis 10 %
Brad Awl per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td " 5 25—dis 20&10 %
" " " large " 6 50—dis 20&10 %
Apple " " ass'td " 6 00—dis 20&10 %
" " " large " 7 50—dis 20&10 %
Socket " " ass'td " 3 50—dis 20&10 %
" Framing " " 7 00—dis 20&10 %
File " 4 00—dis 20&10 %
Auger " 6 50—dis 20&10 %
" large " 8 00—dis 20&10 %
Patent Auger, Ives' dis 25&10 %
" " Douglass' per set $1 25—dis 10 %
" " Swan's per set $1 00—dis 10&10 %

Hangers.
Barn Door dis 65&10 %
"Anti-Friction" (Rider, Wooster & Co.) dis 30&5 %
Novelty dis 30 %

Harness Snaps.
Henshaw's dis 25&10 %
Judd's dis 40 %
Fitch's (Bristol) dis 30 %
Hotchkiss' dis 10 %
Andrews' dis 25 %
Sargent's dis 50&10 %
New York Wire dis 20&20 %

Hatchets.—Isaiah Blood dis 15 %
Shingling, Nos. 1 2 3 ⅌ doz $7 25 8 00 8 75
Claw, " 1 2 3 ⅌ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ⅌ doz 7 50 8 00 8 50
Hunt's dis 10 %
Shingling, Nos. 1 2 3 ⅌ doz $7 25 8 00 8 75
Claw, " 1 2 3 ⅌ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ⅌ doz 7 50 8 25 9 00
Hurd's dis 25 %
Shingling, Nos. 1 2 3 ⅌ doz $8 00 8 50 9 00
Claw, " 1 2 3 ⅌ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ⅌ doz 8 00 8 50 9 00
Newark's Edge Tool Co.'s dis 25 %
Shingling, Nos. 1 2 3 ⅌ doz $6 50 7 00 7 50
Claw, " 1 2 3 ⅌ doz 7 25 7 75 8 25
Lathing, " 1 2 3 ⅌ doz 6 50 7 00 7 50
Yerkes & Plumb dis 15 %
Shingling, Nos. 1 2 3 ⅌ doz $7 00 7 50 8 00
Claw, " 1 2 3 ⅌ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ⅌ doz 7 00 7 50 8 00
Simmon's dis 15 %
Shingling, Nos. 0 1 2 3 ⅌ doz $7 50 8 00 8 50 9 00
Claw, " 1 2 3 ⅌ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ⅌ doz 8 00 8 50 9 00
Broad, " 1 2 3 ⅌ doz 9 00 10 00 12 00
" " 4 5 6 ⅌ doz 14 00 16 00 18 00
" " 7 8 ⅌ doz 20 00 22 00
Elephant dis 25 %
Shingling, Nos. 1 2 3 ⅌ doz $8 00 8 50 9 00
Claw, " 1 2 3 ⅌ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ⅌ doz 8 00 8 50 9 00
J. P. Verree & Co. dis 5 %
Shingling, Nos. 1 2 3 ⅌ doz $7 00 7 50 8 00
Claw, " 1 2 3 ⅌ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ⅌ doz 7 00 7 50 8 00
Underhill's dis 10 %
Shingling, Nos. 1 2 3 ⅌ doz 7 25 8 00 8 75
Claw, " 1 2 3 ⅌ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ⅌ doz 12 00 11 00 13 00
M. H. Jones & Co. dis 25 %
Shingling, Nos. 1 2 3 ⅌ doz $8 00 8 50 9 00
Claw, " 1 2 3 ⅌ doz 9 00 9 50 10 00
Lathing, " 1 2 4 ⅌ doz 8 00 8 50 9 00

Hinges.
Gate, Western ⅌ doz $6 25—dis 60&10 %
" N. E. ⅌ doz 11 25—dis 60&10&10 %
" N. Y. State ⅌ doz 7 20—dis 60&10 %
Rolled Plate dis 65&10 %
" Raised dis 65&10 %
Wrought Strap and T dis 33⅓&10 %
Providence Plate. { 6 and 8 in. 11c ⅌ ℔ ; over 8 in. 9½c ⅌ ℔ } dis 30 %
Screw Hook and Strap { 8, 10, 12 in. 7c ; 14 to 36 in. 6c } net
Heavy Welded Hook { 8 to 12 in., 6½c ; 14 in. & up, 6c } net
Screw Hook and Eye { ⅝ to 1 in., 8½ ; ⅜ in. 9½ ; ¼ in. 11½ } net

Hoes.
Solid Shank, C. S. ⅌ doz $8 00—dis 35 %
Socket ⅌ doz 9 00—dis 35 %
Riveted Eye ⅌ doz 5 00—dis 35 %
Grub dis 25 %
Planters net @ dis 5 %
Scovill add 33⅓ %
Scovill Pattern net @ dis 5 %
Lane's C. S. Cresent, American Pattern list net
" " Scovil Pattern add 10 %

Hooks.
Bird Cage dis 60&10 @ 70&10 %
Cotton dis 50 %
Belt dis 55 @ 60 %
Bench—Hotchkiss' $5 00 ⅌ doz dis 10 %
" Weston's No. 1, $8 00; No. 2, $7 00 per doz net
" McGill's $3 00 per doz, dis 10 %
" Skinner's per doz $6 25, dis 20 %
Clothes Line, Harness, Wardrobe, Hat and Coat, Ceiling — Hart's list dis 60&10&10 %; Sargent's list dis 60&5&10 %; Reading list dis 35&10 %
Wrought Staples and Hooks and Staples dis 70&10 %
Wire Screw Hooks and Eyes dis 65&10&10 %
Grass dis 20 %
Whiffletree—Patent dis 30 %
Hooks and Eyes—Malleable Iron dis 60&10&10 %
" Brass dis 60&10&10 %

Horse Nails.

Nos.		5	6	7	8	9	10
American Pressed	⅌ ℔	22c	20c	20c	20c	20c	20c
Ausable	"	30c	27c	25c	24c	23c	22c
" P't'd & Pol'd	"	31c	28c	26c	26c	24c	23c
" " & Blued	"	32c	29c	27c	26c	25c	24c
Brundage	"	30c	26c	24c	23c	22c	21c
Buffalo Forged	"	31c	28c	26c	25c	24c	23c
Globe, P't'd & Pol'd	"	31c	28c	26c	25c	24c	23c
National, Pointed and Polished, Pat. Fin	"	29c	25c	23c	22c	21c	20c
National, Pointed and Polished, Ex. Fin	"	30c	27c	25c	24c	23c	22c
New London U. B.	"		29c	27c	26c	25c	24c
" " Great Western	"		27c	25c	24c	23c	22c
Perkins' Finished	"	30c	27c	25c	24c	23c	21c
Putnam	"	32c	28c	26c	25c	24c	23c
Vulcan, P't'd & Blued	"	33c	30c	28c	27c	26c	25c

Star brand, 16c.; Morgan 14c
Putnam 2000 lbs., dis 5 %
Ausable, Am. Pressed, Perkins, Globe, National and New London 1000 lbs., dis 5 %
Vulcan 1000 lbs., dis 7½ %
Vulcan and Brundage 500 lbs., dis 5 %

Horse Shoes.
Burden ⅌ keg, $4 87½
R. I. Horse Shoe Co., Perkins Pattern ⅌ keg, 4 87½
" " R. I. Pattern ⅌ keg, 5 87½
Mule Shoes ⅌ keg, 5 87½

Kettles.
Brass ⅌ ℔ 45c net
Enameled dis 30 @ 40 %

Knives.
Ames' Butcher Knives dis 20 %
" Shoe " dis 15 %
" Bread " ⅌ doz $1 50—dis 15 %
Hay and Straw, "Wadsworth's" dis 20 %
Table and Pocket See Cutlery

Knobs.
Carriage (Jap'd 8) cents per gross) dis 60&10 %
Base—Common net
" Plush Tip dis 10 %
" Elastic End, No. 8 dis 30&10 %
Door, Mineral ⅌ doz $2 25
" Por. Jap'd ⅌ doz 3 00 } dis 45&5&2 %
" " Plated ⅌ doz 7 00
" " Por. ⅌ doz 7 50
Furniture, Plain 75c gross inch, dis 10 %

Ladles.
Melting, Hart's dis 55&10 %
" Sargent's dis 5&10 %
" Reading dis 15&10 %

Lanterns.
Tubular No. 0, $11 00; No. 1, $14 00 net
Peerless No. 5, per doz $11 75—dis 10&10 %
Brady's Patent dis 10 & 10 %
Ætna dis 10 & 10 %
Yankee dis 10 & 10 %
De Beque dis 10 & 10 %

Lard Presses.
Draw Cut, 14 inch each $65 00—dis 20 %

Lemon Squeezers.
Porcelain Lined per doz $7 00, dis 15 %
Eureka, Tinned per doz, $10 00 dis 10 %
Dunlap's Improved per doz $6 00 net

Lines.
Linen Fish dis 20 %
Cotton Chalk dis 40 @ 45 %
Sil. Lake Chalk Nos. 0, 1, 2, 3, $6, 6 50, 7, 7 50, dis 20 %
Mason's dis 20 %

Locks and Latches.
Cabinet—Gaylord dis 25 %
" Eagle dis 25 %
Trunk " new list dis 25
Langstroth & Crane, Round Key dis 40 %
" " Flat Key dis 33⅓ %
Barnes & Deitz dis 25 %
Continental dis 15 %
Shepardson's dis 20 %
American Lock Co. dis 33⅓ %
Plate dis 25 %
Yale Lock Co. dis 40 %
Sargent & Greenleaf dis 20 %
Trenton, Branford, Norwich, Russell & Erwin, Norwalk, Nashua, Mallory, Wheeler & Co., P. & F. Corbin, Parker & Whipple, Jacobus & Nimick Mfg. Co. — See Trade Report.
Padlocks, Russell & Erwin, Mallory, Wheeler & Co., Wm. Wilcox & Co. — See Trade Report.
" Romer's dis 15 %
" Vulcan Hardware Co. dis 20 %
" New York Lock Co. dis 20 %
" J. H. McWilliams dis 5 %
" Scandinavian Jail dis 10 %
" Barnes & Deitz dis 25 %
" D. K. Miller Lock Co. dis 30 %
" Penn Lock Works dis 20 %

Mallets.
Hickory and Lignumvitæ dis 20 %

Meat Cutters.
Dixon's (P. S. & W.) Nos. 1 2 3 4
⅌ doz. $14 00 $17 00 $19 00 $30 00 dis 10 %
Miles Challenge Nos 1 2 3
⅌ doz. $22 00 $30 00 $40 00—dis 20 %
Perry's (P. S. & W.) Nos. 200 300 400
⅌ doz. $22 00 $27 00 $40 00—dis 10 %
Woodruff's (P. S. & W.) Nos. 100 150
⅌ doz. $15 00 $18 00—dis 10 %
Hales' Nos. 11 12 13
⅌ doz. $27 00 $33 00 $42 00—dis 25 %
Draw Cut Nos. 5 6 7
Each $36 00 $90 00 $250 00—dis 20 %
American dis 25 @ 25&5 %

No.	1	2	2½	3	4	B	5
Each	$6 00	$9 00	$12 00	$15 00	$30 00	$60 00	$75 00

Molasses Gates.
Stebbins' dis 65&10 %
" Tinned ends dis 40&10 %
Bush's dis 20 %
Lincoln's dis 50&10 %
Weed's dis 15 %

Mortars and Pestles.
Iron net

Nail Pullers.
Taft's per doz $24 00 net

Nails See Trade Report

Nuts and Washers.
Nuts large, 6c; small, 8c off list.
Washers large, 8c; small, 10c off list.

Oilers.
Miller's Zinc, Brass and Copper dis 40 %
Sheet Metal Screw, Zinc dis 37½ %
" " " Brass dis 33⅓ %
Olmsted's dis 25&10 %
Broughton's dis 25&10 %
Malleable per doz $5 00 dis 10 %
Prior's Patent or "Paragon" dis 30&10 %

Ox Shoes.
Concave ⅌ ℔ 13c net

Ox Balls dis 60&10 %

Pencils
Faber's Carpenters' net
" Round Gilt ⅌ gross $6 00 net
Dixon's Lead ⅌ gross $4 50 net
" Lumber ⅌ gross 9 00 net

Picture Nails and Knobs.
Brass Head dis 60&10 %
Porcelain Head dis 55&10 %
Richards' Patent dis 40 @ 40&10 %
Judd's dis 60&10 %

Pinking Irons per doz $2 75—dis 65 %

Planes.
First Quality dis 35 %
Second Quality dis 50 %
Bailey's Patent Adjustable dis 20&10 %
Plane Irons, Butcher's $5 50 to £ gold—new list
" Buck Bros $5 50 to £ gold
" Auburn Tool Co.'s dis 25 %
" Greenfield Tool Co. net list
" Middletown Tool Co. net list
" Ohio Tool Co. dis 10 %
" Spear & Jackson's 5 50 to £ gold—new list
" Sandusky Tool Co dis 10 %
Plow Bits, Greenfield Tool Co. dis 10 %

Pliers and Nippers.
Button's Patent dis 33⅓ %
Hull's Patent Nippers dis 25 %
Leach's Patent Wire Cutters per doz $6 50—dis 15 %
Gas Pliers dis 25 %

Plumbs and Levels.
Chapin's dis 66⅔&10 %
Standard Rule Co.'s New Adjustable dis 60&10 %
Standard Rule Co.'s Non-Adjustable dis 60&10&10 %
Stanley R. & L. Co.'s Pat. Adjustable dis 60&10 %
" " " Non-Adjustable dis 65&10 %
Pocket Levels dis 50&10 %
Johnson's Patent Adjustable dis 60&10 %

Pulleys.
Hot House and Tackle dis 60&10 %
Jap'd Screw dis 60&10 %
Brass Screw dis 60&10 %
Jap'd Side dis 60&10 %
" Clothes Line dis 60&10 %
Hay Fork per doz $4 50 @ 5 00, dis 10 %

Pumps.
Douglas Cistern, etc. new list dis 25 %
" S. & F. new list dis 20 %
Union Mfg. Co.'s Cistern and Pitcher dis 25 %
" " " Rams dis 20 %
" " " Garden Engines dis 10 %
Cucumber (Buckingham & Purdy)—
6 ft. No 2, with 12 ft. pipe $4 00 net
6 ft. No. 1, with 12 ft. pipe 4 50 net
From 6 to 36 ft. add 20 cents per ft.
Pipe, 8c. per ft.; Coupling, 20c. per ft.

Punches.
Belt or Drive per doz $1 50 net
Spring per doz $7 00—dis 20&10 %

Rail.
Sliding Door, Wrought Brass ⅌ ℔ 44c., dis 10 %
" " Iron, Painted ⅌ foot 9c—dis 55&10 %
Barn Door, ½, ⅝ and ¾ inch dis 60&10&10 %
" " for N. E. Hangers dis 60&10&10 %

Rakes.
Cast Steel dis 35 %

$8 00	9 00	10 00	11 00
8	10	12	14 teeth.

Malleable dis 35 %

$5 00	5 50	6 00	6 50
9	11	13	15 teeth.

Razor Straps.
Evan's dis 25&10 %
Genuine Emerson (B. F. Badger or C. Emerson) dis 25 %
Imitation Emerson ⅌ doz $2 75—dis 40 %
Hunt's dis 40 %
Chapman dis 10 @ 15 %
Torrey's dis 10&10 %
Saunder's net @ 10 %

Rivets.—Old Colony.
Iron and Tinned dis 25&7½ %
In bulk dis 7½ %
Copper Rivets and Burrs dis 20 %

Nos.	7	8	9	10	11	12	13	14	15
Per lb.	48c	50c	52c	54c	56c	58c	60c	65c	70c

Rivet Sets net

Rods.
Stair new list dis 30 @ 33⅓ %
" American Patent dis 33⅓ %

Rollers.
Barn Door revised list dis 60, 10&10 %
Novelty dis 10 %

Rope. Manufacturers' List of May 10, 1875.
Manila ⅜ inch and larger ⅌ ℔ 15 c
" ¼ inch ⅌ ℔ 15½c
" ⅜ and 5-16 inch ⅌ ℔ 16 c
Manila Lath Yarn and Tar'd Rope ⅌ ℔ 14½c
" Hay Rope ⅌ ℔ 15½c
Sisal ⅜ inch and larger ⅌ ℔ 12 c
" ¼ inch ⅌ ℔ 12½c
Sisal ⅜ and 5-16 inch ⅌ ℔ 13 c
" Hay Rope ⅌ ℔ 12½c

Rules.
Hubbard & Curtiss dis 60&2c

	Boxwood,	Ivory.
Chapin's	dis 66⅔&10 %	dis 50&10 %
Stanley	dis 70 %	dis 50&10 %
Standard	dis 70 %	dis 50&10 %
Stephens'	dis 70 %	dis 50 %

Sad Irons.
From 4 to 10 lbs. ⅌ ℔ 3¾ @ 4c net
Sad Iron, Nickel Stand attached ⅌ ℔ 9c
Self-Heating per doz $10 00 net
" " Tailors' per doz 22 50 net

Sand Paper.
Baeder & Adamson's (Flint) 00 to 1½ $4 25 ⅌ ream
" " " 2, 2½ & 3 4 75 "
" " Assorted 4 25 " } dis 15 %
" " Star ⅌ ream $3 25
" " Emery ⅌ ream $6 50 @ 11 50
H. B. & M. Roman Flint dis 15 %

Sash Cord.
Common ⅌ ℔ 18 @ 20c. net
Patent ⅌ ℔ 24c. net
Silver Lake, Russia Flax ⅌ ℔ 55c
" " White Cotton ⅌ ℔ 55c } net
" " Drab Cotton ⅌ ℔ 60c

Sash Locks.
Clark's, Nos. 1 and 2, $10 00 per gross dis 33⅓ %
Ferguson's dis 33⅓ %
Norwich dis 15 %
Walker's list net

Sash Weights.—Solid Eyes ⅌ ℔ 3c

Sausage Stuffers or Fillers.
Miles ⅌ doz $20—dis 10 %
Stow or Perry ⅌ doz No. 1, $15; No. 0, $21—dis 15 %
Draw Cut No. 4 each $30 00—dis 20 %

Saw Frames per gross $18 00—dis 10&10 %

Saw Rods $10 list, dis 10&10 %

Saws.
Spear & Jackson's old pattern $4 50 to £ gold
Spear & Jackson's American Pattern $3 55 to £ gold
John Spear $3 60 to £ gold
Am. Saw Co. new list
Perforated Cross Cuts, all kinds 68c ⅌ foot
Inserted Tooth dis 10 %
All else dis 12½ %
Disston's Circular dis 20 %
" Mill dis 25 %
" Cross Cut dis 15 %
" other kinds dis 12½ %
Livingston's Framed Wood list net
Livingston's Butcher and Kitchen dis 12½ %
H. W. Peace's Circulars dis 10 %
Other kinds dis 10 %
Wm. McNiece's Hand, Cross Cut and Circular new list dis 15 %
Wm. McNeice's Patent Pole Pruning Saw dis 10 %
" " " Compass Saw net.
E. M. Boynton's Lightning dis 40 %
" " Others dis 15 %
Wheeler & Clemson Mfg. Co.'s Hand dis 15 %
" " " " Cross-Cut dis 30 %

Saw Sets.
Stillman's Genuine ⅌ doz $5 00—dis 10 %
" Imitation ⅌ doz 3 25—dis 20 %
Aiken's Pattern ⅌ doz 7 00—dis 25&10 %
" Genuine ⅌ doz $15 00—dis 25 %
Hart's Patent dis 15 %
Nash's dis 20&10 %
Bemis & Call's dis 20 %
Hotchkiss' ⅌ doz 5 50—dis 10 %
Common Lever per doz $2 00—dis 20 %
Leach's dis 15 %

Scales.
Hatch, Counter ⅌ doz $36—dis 25 %
" Tea ⅌ doz $15—dis 25 %
Union Platform $6 00, $7 50—dis 40 %
Turnbull's dis 20 %
Brown's dis 25&5 %
Fairbanks' new list dis 15 @ 20 %
Howe's dis 15&5 %
Chatillon's Grocers' dis 25 %
" Eureka dis 20 %
Universal Family dis 20 %
Scale Beams.
No. 1 800 to 1200 lbs. 90c ⅌ cwt } dis 33⅓ %
No. 2 " " 75c ⅌ cwt

Scrapers.
Box, 1 Handle per doz $6 25, dis 10 %
" 2 " per doz 7 50, dis 10 %
Foot dis 60 & 10 %
Ship (common) per doz $3 00 net
Ship—Providence Tool Co. dis 10 %

Screw Drivers.
Hart, Bliven & Mead dis 55&10 %
Douglass Mfg. Co. dis 20&10 @ 25&10 %
Disston's dis 40&10 %

Screws.
Flat Head Iron, List of April 1, 1875 dis 62½ %
Round Head Iron " " " dis 50 %
Flat Head Brass dis 52½ %
Round Head Brass dis 50 %
Round Head Silver Capped, List March 1 dis 25 %
Hand Rail dis 55&10 %
Coach or Lag dis 30&10 @ 40 %
Coach, Patent Gimlet Point, List Jan. 1, 1875 dis 25 %
Bed list net
Japanned (List of Flat Head Iron) dis 50 %
Machine—Flat Head, Iron, List Jan. 12, 1875 dis 25 %
" " Brass, " " dis 15 %
" Round Head, Iron, " " dis 20 %
" " Brass, " " dis 10 %
English, Flat Head, Iron; American List.
Nettlefold & Chamberlain's dis 60&10 %
Birmingham Sc'w Co. dis 60&10 %
Bench—Iron dis 60, 10&10 %
" —Wood, Beech ⅌ doz $3 00 net
" " Hickory dis 20&10 %
Hand dis 25&10 %
Jack—Bell Bottom dis 15 %

Scythes.
Blood's German Steel, Grass ⅌ doz $10 00
" Cast " " ⅌ doz 11 00
" Silver " " ⅌ doz 12 00
" German " Grain ⅌ doz 14 00 } dis $1 50 from list
" Cast " " ⅌ doz 15 00
" Excelsior and Granger ⅌ doz 11 00
" Young America 10 50
" Silver Clipper 13 00
Scythe Snaths dis 20 %

Sieves.—Mann's Patent dis 25 @ 30 %

	14	16	18	20	24	30 mesh
Iron	$4 00	4 00	4 25	4 50	4 75	6 50 ⅌ doz
Plated	4 75	5 00	5 25	5 50	5 75	8 50 "

Wood Rims 18 mesh, $1 50 per doz, dis 10 %

Shears and Scissors.
Cast Steel dis 75 @ 75&10 %
Cast Iron dis 50 %
Heinisch Sons' Trimmers and Scissors dis 65 %
" " Standard quality Shears and Trimmers dis 40 %
Seymour's Straight Trimmers dis 60&10 %
" Scissors dis 50 %
Pruning per doz $10 00—dis 35 %
Barnard's Lamp Trimmers per doz $8 75—dis 30 %

Sheaves.
Sliding Door, M. W. & Co. list dis 45&5 %
" R. & E. list dis 50 %
" Patent Roller dis 25 %
" " " Hatfield's dis 30 %
" Russell's Anti-Friction dis 50 %
Sliding Shutter dis 50&5 %

Shovels and Spades.
Ames dis 12½ %
Birmingham Shovel Co. dis 15 %
Rowland's dis 25 %
Old Colony new list dis 10&5 %
Middleboro' Shovel Co. new list dis 12½ %
C. E. Jennings dis 12½&5 %
Dunning's Shovels and Scoops dis 20&7½ %
Snow Shovels ⅌ doz $7 00 @ 8 00 net

Shovels and Tongs.
Iron and Brass Head, R. & E. list dis 50 %
" " Hart's dis 50&10 %
Polished Steel new list dis 50 %

Skates.
Barney & Berry's
N. Y. Club ⅌ pair $2 75
B. & B. Club " 3 50 } dis 25 %
All Clamp " 4 25
Rink " 8 00
Florence Club per pair $3 50—dis 25 %
" Steel per doz $9 net
Peck & Snyder's—
American Club, Polished ⅌ pair $5 00
" " Blued Top ⅌ pair $3 75 net

Slates.
Square Frames, Round Cornered, by case dis 40&10 %
Less than a case dis 70 %

Spoke Shaves.
Iron dis 33⅓&10 %
Wood dis 30 %
Bailey's dis 20&10 %

Spoons.
Tinned Iron dis 10 %
By the case dis 20 %
Basting dis 10 %
Britannia dis 50&5 @ 55 %
" Boardman's, new list dis 55 %
Rogers & Bro., A 1 dis 50 %
Derby Silver Co. dis 50 & 5 %
Holmes, Booth & Haydens dis 50 %
Nickel Silver Co. dis 40 %
German Silver dis 30 @ 33⅓ %
Tin (P. S. & W.)—
Teas $1 50 ⅌ gross, net
Tables 2 75 " net

Stocks and Dies ... dis 5&10 %

Stone.

Hindostan Stone ... ₽ lb 6c } dis 20&10 %
" Axe Stone ... ₽ lb 8c
" Slips ... ₽ lb 10c
Sand Stone ... ₽ lb 6c—dis 20&10 %
Washita Stone ... No. 1, ₽ lb 22c net
" ... No. 2, ₽ lb 17c net
" Slips ... No. 1, ₽ lb 45c net
Arkansas Stone ... No. 1, ₽ lb $1·25 net
" Slips ... No. 1, ₽ lb $2·00 net
Grindstones, Family, J. F. Green & Bro ... dis 20 %

Stove Polish.

Joseph Dixon's ... ₽ gross, 6 00
Gold Medal ... ₽ gross $6 00 dis 25 %

Squares.

Steel ... dis 50 %; full cases, dis 50&10 %
Iron ... dis 50 %; full cases, dis 50&10 %
Nickel Plated ... add $2 50 @ $4 00 ₽ doz net
Try Squares and T Bevels ... dis 45&10 %
Star Try Squares and Bevels ... dis 30 %
Disston's Try Squares No. 1 ... dis 20 %
" " No. 2 ... dis 40 %
" " Improved ... dis 20 %

Tacks.

Full Weight American Iron ... dis 45&7½ %
Half Weight American Iron ... dis 72½&7½ %
Carpet ... dis 7½ %
Brads American Half Weight ... dis 50&7½ %
Finishing Nails ... ⅜ ⅝ ¾ 1 1¼ in. and over
₽ lb ... 25c 20c 16c 14c 12c dis 7½ %
Trunk and Clout ... ⅜ ⅝ ¾ 1 1¼ in. and over
₽ lb ... 25c 20c 16c 14c 12c dis 7½ %
Copper Tacks ... ₽ lb 50c—dis 7½ %
Iron Shoe Nails, ₽ lb 4-8 and longer, 9½c; 3½-8, 10c ... dis 7½ %
Double Pointed ... dis 33⅓&10 %

Tapes, Measuring.

American Flask and Cap Co ... dis 20 %
Eddy's ... dis 20 %

Tea Trays.

American Tea Tray Co ... dis 15 %

Thermometers.

Tin Case ... dis 50&10 %

Toe Calks.

... ₽ lb 13c net

Tobacco Cutters.

Enterprise Mfg. Co. (Champion) ... dis 20 %
Wood Bottom ... per doz $12—dis 25&10 %
All Iron ... per doz $10·50—dis 25&10 %

Tinners' Tools and Machines.

P. S. & W ... list net

Traps.

Newhouse ... dis 20 %
Peck, Stow & Wilcox ... dis 30 %
Blake's Patent ... dis 30 %
Mouse, Wood Choker ... ₽ doz holes, 15 @ 16c
" Patent Chocker (Union Nut Co.) ... ₽ doz holes 16 @ 18c net
" Round, Wire ... ₽ doz $1 50 to 2 00 net
" Square, " ... ₽ doz 2 00 to 2 50 net
Cage, " ... ₽ doz 2 50, dis 10 %

Trowels.

Lothrop's Brick and Plastering ... dis 10 %
Disston's Plastering ... dis 12½ %
Disston's Brick ... dis 12½ %
Rose's Brick ... dis 5 %
Brades' Brick ... gold. dis 10 %
Worrall's Brick and Plastering ... dis 20 %
Garden ... dis 25 %

Triers.

Butter and Cheese ... dis 25 %

Ventilators (Window).

Nickel and Gilt ... per dozen $16·00 @ 18·00

Vises.

Trenton Vises, Solid Box.
40 to 160 lbs ... 16c
160 and over ... 18c
Peter Wright's ... ₽ lb 15½c. gold
Wilson's Solid Box ... dis 15 @ 20 %
31 to 160 lbs ... 18c
160 and upward ... 22c
Wilson's Parallel ... dis 30 %
Sargent's " ... dis 50&10&10 %
Backus & Union, Parallel ... dis 25 %
Buffalo, Parallel ... new list dis 25 %
Fisher & Norris' Double Screw Parallel ... dis 15&10 %
Trenton Parallel ... dis 15 %
Merrill's Parallel ... dis 15 %
Parker's ... dis 20 %
Stephens' Parallel ... dis 15 @ 20 %
Bonney's Saw Filers ... per doz $20—dis 20 %
Stearn's Saw Filers ... per doz $20—dis 20 %

Wheel Barrows.

Canal (Pugsley & Chapman) ... new list dis 12½ %
Coal, Garden and Stone (Pugsley & Chapman) ... dis 25 %

Well Wheels.

Revised list ... dis 60&10 %

Wire.

Brass and Copper ... dis 10 %
Bright and Annealed ... Nos. 0 @ 18 dis 40 @ 45 %
" " ... " 19 @ 26 dis 47½ @ 52½ %
" " ... " 27 @ 36 dis 52½ @ 57½ %
Coppered ... " 0 @ 18 dis 35 @ 40 %
Galvanized, Nos. 0 to 9 ... ₽ lb 8½ @ 9c net
Galvanized, Nos. 10 to 18 ... market list dis 10 @ 15 %
Tinned ... dis 25 @ 30 %
Cast Steel ... dis 15 @ 20 %
Tinned Broom Wire ... dis 30 @ 35 %
Galvanized Telegraph, Nos. 8 and 9 ... ₽ lb 9c @ 9½c
Galvanized Telegraph, Nos. 10 and 11 ... ₽ lb 10c @ 10½c
" " 12 ... ₽ lb 10½c @ 11c
Annealed Fence, Nos. 8 and 9 ... dis 40 @ 45 %
" Grape, " 10 to 14 ... dis 40 @ 45 %
Fence Staples ... ₽ lb 8 @ 8½c
Stubs' Steel Wire ... $7 00 to [illegible] gold
Judd's Picture Wire ... dis 50
Clothes Line Wire ... per coil 60c. net

Wrenches.

American Adjustable ... dis 45 %
Baxter's Adjustable "S" ... dis 20 %
" Diagonal ... dis 20 %
Collins & Co.'s ... dis 45 %
Coes' Genuine ... dis 40&5 %
" Pattern (Wrought) ... dis 50&10 %
" " (Malleable) ... dis 60&10 %
Lindsay's Patent ... dis 25 %
Taft's Pattern ... dis 70&10 %
Davis Patent Duplex ... new list dis 25 %
Bemis & Call's Patent Combination ... dis 20&5 %
" " Merrick's Pattern ... dis 25&2½ %
" " Brigg's Patent ... dis 15&10 %
Aiken's Pocket ... per doz $10·00—dis 4&10 %

Wringers.	Less than 2 doz	2 doz lots
Providence ... ₽ doz	$64 00	$62 00
Reliance ... ₽ doz	61 00	59 00
Universal—Extra ... ₽ doz	64 00	62 00
Novelty ... ₽ doz	64 00	62 00
Sherman ... ₽ doz	64 00	62 00
Eureka (Friction) ... ₽ doz	60 00	58 00

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE, dis 5 %.
COMMON STAMPED WARE, &C.

Bucket Covers.

Quarts	½		2	3	4
Inch	4½	5 3-16	6 5-16	6¾	7 11-16
Per gross	$2·00	2·60	3·40	4·25	5·75
Quarts		6	8	10	12
Inch		8¾	9¼	9½	10 9-16
Per gross		$6·50	8·00	8·50	11·50

Cake Box Covers.

	Small.	Medium.	Large.
Inch	11½	12½	13½
Per gross	$15·00	18·00	22·00

Pot Covers.

Inch	7½	8½	8¾	9¼	9¾	10¼
Per gross	$5·75	6·00	6·25	6·75	7·25	8·25
Inch	10¾	11½	11¾	12¼	12¾	13½
Per gross	$8·75	9·50	10·00	13·00	13·75	16·50

Pie, Dinner or Scolloped Plates.

Inch	6	7	8	9	10	11
Per gross	$4·00	4·50	5·50	5·90	8·50	10·50

Deep Pie Plates.

Inch	9	10
Per gross	$8·50	10·50

Jelly Cake Pans.

Inch	9	10
Per gross	$7·50	10·00

Coffee Pot Covers.

Plain	1½	2	3	4	5	6 qts.
Inch	3	3¾	3¾	4½	5	
Per gross	$1·15	1·40	1·60	2·00	2·75	3·00
Rimmed	2¾	3	3½	4	4½ inches.	
Per gross	$2·25	2·50	3·00	3·50	4·00	

T. K. Breasts only.

Inch	7½	8	8½	9	9½	10	10½	11	11½
Per gro.	$6·00	6·20	6·75	7·25	7·75	9·50	10·00	12·00	13·00

Grater Plates.

Sheet	½	¾	1
Per gross	$3·00	6·00	11·50

Scolloped Cake Pans.

	Small.	Large.
Without Tubes ... per gross,	$8·00	11·50
With Tubes ... "	10·50	14·00

Stamped Square Pans.

No.	½	
Per gross	$7·50	14·50

Common Square Pans (One Sheet).
Per gross ... $11·50

Milk Skimmers (Plain or Pierced).
Per gross ... $4·00

Lettered Plates.

Inch	5½	6
Per gross	$3·25	4·00

Steamer Bottoms.
Add $1 per gross, or 10c. per doz. to list of Pot Covers.

Tin Stove Pipe Rings.

Inch	4	4½	5	5½	6	7
Plain ... per gro.	$4·00	4·50	5·00	5·50	6·00	7·00
Jap'd or Burn'd .. "	6·00	6·50	7·00	8·00	9·50	10·00

Coffee Boiler Lips.

	Small.	Large.
To Rivet ... per gross,	$0·80	1·10
To Solder ... "		1·25

STAMPED DEEP AND RETINNNED WARE, dis 30 %.

Plain Stamped Water Dippers.

	½ pint.	Pint.	Quart.	quarts.	2½ quarts.
Per doz	·90	1·15	1·30	1·85	2·50

Retinned Milk Pans.

Qts.	½	1	1½	2	3	4	5	6	8	10	12
₽ doz.	1·20	1·50	1·75	2·00	2·25	3·15	3·50	3·85	4·75	5·25	5·75

Dipper Bowls, Plain Stamped—
Pints ... ½ 1 — Quarts ... 1 2 2½
Per doz. ·50 ·75 — Per doz ... 1·00 1·25 1·75

Dipper Bowls, Retinned—
Pints ... ½ ¾ 1 — Quarts ... 1 2 2½
Per doz. ·75 ·90 1·05 — Per doz .. 1·40 1·75 2·25

Pans.

Dish Pans. Retinned Deep—

Quarts	7	8	10	14	17	21	30
Per doz.	$8·00	9·50	11·00	13·00	16·00	19·00	30·00

JAPANNED TIN WARE, dis 5 %.

Canisters, Common ... Pound ½ 1 2 3
Per gross $10·50 15·00 24·00 30·00
Canisters, Hinged ... Pound 1 1½ 2 3 4
Per gross $19·00 25·00 32·00 37·00 42·00
Canisters, Square ... Pound 2 4 6 8 12 16
Per doz $3·00 4·25 5·00 5·75 9·00 9·10

Candlesticks, Japanned ... No. 1 2
Per gross $8·00 7·00
Cake Boxes, Round ... per nest, $3·25
" Square ... per nest, 4·25

Chamber Pails, Japanned

Nos	2	3	4	5
Green, per doz	$8·00	9·00	11·00	13·00
Oak "	$9·00	11·00	12·00	13·50

Dust Pans, Corrugated ... per gross, $22·00
Box Graters ... per gross, $3·75
Molasses Cups ... Pint ½ 1 2 4
Per gross $13·00 16·00 28 00 42·00
Lunch Boxes, per doz ... 7 in $2·00; 8 in. $2 50
Pepper Boxes Japanned .. ₽ gross small, $3·00; large, $4·00
Toy Banks, House ... No. 1 2
Per gross $7·00 5·50
Toy Banks, Gothic ... No. 1, $6·00, No. 2, 4·00 per gross
Toy Cups, Straight ... No. 1 2 3
Per gross $3·75 3·25 2·75
Toy Cups, Flaring ... No. 1, $4·25; 2, $3·75 ₽ gross
Toy Pails, Covered ... No. 1, per gross $4·00
Toy Rattles ... per gross, $2·00
Trunks, Wire Handled ... per nest (5) $1·75
Spittoons, Tin ... per gross, $27

PLANISHED TIN WARE, dis 20 %.

Planished Coffee Pots, Round.

Each	$·60	·75	·85	·95	1·15	1·25	1·30	1·40
Pints	1	2	3	4	5	6	7	8

Planished Tea Pots, Round.

Each	·70	·80	·95	1·05	1·25
Pints	2	3	4	5	6

Planished Tea Pots, Oval.

Each	·70	·80	·90	1·05	1·15	1·40	1·75
Pints	1	2	3	4	5	6	8

Planished Pepper Boxes, No. 1 ... per doz., $1·52
Planished Flour Dredges, No. 3, $2·10; 4, 2·45 ₽ dozen.

Planished Round Coffee Biggins.

Pints	2	3	4	5	6	8
Each	$1·00	1·10	1·20	1·40	1·60	2·00

Planished Oval Coffee Biggins.

Pints	2	3	4	5	6	8
Each	$1·15	1·25	1·40	1·60	1·80	2·25

Planished Oval Chafing Dishes, Imperial Covers.

Inch	10	12	14	16	18	20	22	24
Each	$3·85	5·00	6·25	7·60	9·00	11·50	15·00	16·50

Planished Oval Chafing Dishes, Low Covers.

Inch	10	12	14	16	18	20
Each	$3·25	4·35	5·20	6·20	7·80	9·25

Planished Low Dish Covers.

Inch	10	11	12	14	16	18	20
Each	$·70	·80	1·00	1·25	1·50	2·00	2·75

Planished Imperial Dish Covers.

Inch	10	11	12	14	16	18	20	22	24
Each	$1·55	1·70	2·00	2·60	3·15	3·45	4·00	5·45	6·30

Planished Etnas, on Stands.

Pints	1½		3	4	5
Each	$0·90	1·00	1·20	1·50	1·75

Planished Liquor Mixers ... Nos. 0 1 2
Per doz $2·00 2·10 2·45

Planished Oval Melon Molds.

Nos	2	3	4	5	6	7	8	9
Each	$·60	·65	·70	·80	·90	1·00	1·15	1·35

Planished Oval Tumbler Warmers.
To fit 1, 2, 5, and 4 O. G. Urns ... each, $2·50

Planished Oval O. G. Urns.

Nos	0	1	2	3	4	5	6	7	8
Each	$4·90	5·45	6·30	7·00	7·75	9·25	11·25	12·50	15·50

Planished Round Urns.

Nos	0	1	2	3	4	5	6	7
Each	$4·20	4·85	5·45	6·30	7·75	9·00	11·00	14·25

Planished Round Oyster Dishes, (Complete) .. Nos. 1 2
Each $2·10 2·80
Planished Oyster Dish Plates ... Nos. 1 2
Each $0·25 0·30
Oyster Dish Covers ... Nos. 1 2
Each $0·30 0·35

Tea Pot Handles—P. S. & W ... dis 20 %
Stow's Patent Hollow Tea Pot Handles.
No. 1, Small 4½ inches ... per gross, $11·50
No. 2, Medium, 5½ " ... " 12·50
No. 3, Large, 6½ " ... " 13·50
No. 4, Ex. Large 7½ in., for Wash Pitchers &c ... " 18·00
Solid Iron, Tin Tipped.
No. 10, Small, 4½ inches ... per gross, $9·00
No. 15, Medium, 5½ " ... " 9·50
No. 20, Large, 6½ " ... " 10·75
Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.
No. 12, Bronzed and Tin-Tipped ... per gross, $13·50
Saucepan Handles. Of Best Malleable Iron.
P. S. & W ... dis 20 %
Japanned.
No. 1, 5½ inches long ... per gross, $3·50
No. 2, 6 " ... " 3·75
No. 3, 6½ " ... " 4·00
No. 4, 7½ " ... " 4·25
No. 5, 8 " ... " 4·50
No. 6, 9 " ... " 4·75
Tinned.
No. 1, 5½ inches long ... per gross, $4·25
No. 2, 6 " ... " 4·50
No. 3, 6½ " ... " 4·75
No. 4, 7½ " ... " 5·25
No. 5, 8 " ... " 5·50
No. 6, 9 " ... " 5·75
Japanned ... per lb., ·16
Tinned ... " ·20
Iron Kettle Ears (P., S. & W.) ... dis 45 %
Half gross pairs in a package.

Tinned.

Nos	1	2	3	4	5	6	7
Per gross pairs	.88c	$1·00	1·50	1·75	2·10	2·75	3·75 [illegible]

Black.

Nos	1	2	3	4	5	6	7	8
Per gross pairs	.75c	88c	$1·25	1·50	1·75	2·25	2·75	4·00

Tinned Tea Kettle Ears.

Nos	4	5	6
Per gross pairs	$1·75	2·10	2·75

Extra Heavy Tinned Kettle Ears—French Pattern.

Nos	1	2	3	4	5	6	7
Per gross pairs	$1·00	1·25	1·50	1·75	2·00	2·50	3·00

Malleable Iron Kettle Ears for Coal Hods &c.
P., S. & W ... dis 20 %
No. 10 Small ... ₽ lb, Tinned 20c; Black, 16c
No. 20 Medium ... ₽ lb, " 20c; " 16c
No. 30 Large ... ₽ lb, " 20c; " 16c
No. 40 Extra Large ... ₽ lb, " 20c; " 16c
In cases of 100 lbs. each.
Milk Can or Boiler Handles—(P. S. & W.) 4½ in .. dis 25 %
Plain, 8c.; Japn'd, 9c.; Tinned, 15c. per lb.; Malleable Clips or Ears to match, Tinned ... 20c per lb.
Toilet Ware Handles—4½ inches (P. S. & W.) ... dis 35 %
Plain with drilled holes, per lb ... 9c
Plain with Cast " ... 8c
Plumbers' Scrapers—(P. S. & W) ... dis 25 %
Extra quality, length 6 in., per doz ... $4·00

METALS.

IRON.—DUTY Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—AMERICAN.
Foundry No. 1 ... ₽ ton, $27 00 @ 28 00
Foundry No. 2 ... " 25 00 @ 26 00
Gray Forge ... " 23 00 @ 25 00
White and Mottled ... "
SCOTCH.
Coltness ... Nominal " 31 00 @ 32 00
Glengarnock ... " 32 00 @ 33 00
Gartsherrie ... " 31 00 @ 33 00
Eglinton ... " 30 00 @ 31 00
Bar Iron.
Am. Refined, at mill ... nominal ...
Rails.
Welsh, gold ... ₽ ton,
American, at works, currency ... " 48 00 @ 50 00
Old Rails ... 26 50
Scrap.
Wrought Scrap ... " 31 00 @ 31 00

Bar Iron from Store.

Common Iron.
¾ to 2 in. round and square } ₽ ton $57 50 @ 60 00
1 to 6 in. x ⅜ to 1 in }
Refined Iron.
¾ to 2 in. round and square } " 62 50 @ 65 00
1 to 6 in. x ⅜ to 1 in }
1 to 6 in. x ¼ and 3-16 ... " 67 50 @ 70 00
Shafting Iron—2½ to 4 in ... " 72 50 @ 82 50
Rods—3-16 to ⅝ round and square ... " 65 00 @ 115 00
Bands ... " 77 50 @ 80 00
Hoops—⅛ to 2 in ... " 87 50 @ 140 00
Swedish Iron.
Ordinary sizes ... " 132 50 @ 135 00
Plow size ... " 145 00 @ 150 00

Sheet Iron.

	Common American and English.	R. G. American.	R. G. English.
Nos. 10 to 20 ... ₽ lb	4c	5¼c	5¼c
21 to 24 ... "	4¼c	5½c	5½c
25 to 26 ... "	4½c	5¾c	5¾c
27 ...	5c	6c	6c
28 ... "	5¼c	6c	6¼c

Galvanized, 1 to 20, prime, ₽ lb 9; 2d quality ... ₽ lb 8c
" 21 to 24 " " 9½ " ... " 8½c
" 25 to 26 " " 10½ " ... " 9½c
" 27 " " 11½ " ... " 10½c
" 28 " " 12 " ... " 11c
Patent Polished ... ₽ lb 14c
Russia, Nos. 8 to 16 ... " 16½c
" Stained, No. 1 ... " 15½c
Belgian ... " 10c
One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON.

⅝	5	5½	6	7	inch.
$2·50	3·50	4·50	5·25	6·50	per doz.

RUSSIA IRON.

4½	5	5½	6	7	inch.
$5·00	7·00	9·50	12·00	14·00	per doz.

COPPER—DUTY. Pig, Bar and Ingot, 5c.; old copper, 4 cents ₽ lb; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem.
American Ingot ... ₽ lb 23½ @ 23¾c
English " ...

SHEATHING, BRAZIERS COPPER, BOLTS, &C.
Braziers Copper, ordinary sizes, over 16 oz., per square foot ... 31c. ₽ lb
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot ... 33c. "
Braziers' Copper, 12 oz. per square foot and lighter ... 33c. "
Circles less than 84 inch in diameter ... 34c ₽ lb
Circles, 84 inch diameter and over ... 37c. "
Segment and Pattern Sheets ... 34c. "
Locomotive Fire Box Sheets ... 31c. "
Sheathing Copper, over 12 oz. per sq. ft ... 30c. "
" " 12 oz. ₽ sq. ft. and lighter ... 35c. "
Bolt Copper ... 31c. "
Copper Bottoms, 38c. ₽ lb ... net
No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

O'NEILL'S PATENT PLANISHED COPPER.
14x48.
14 and 16 oz. and heavier ... 37c. By the case, 36c. ₽ lb
12 oz. and lighter ... 40c. " " 39c. "
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier ... 39c. By the case, 38c ₽ lb
(And all sizes not over 20 inches wide.)
30x60
14 and 16 oz. and heavier ... 41c. ₽ lb
12 oz ... 44c. "

TINNING.
14x48, by the case ... 6c. ₽ sheet
14x48, less than case ... 8c. "
Other sizes not larger than 30x60 ... 2½c. ₽ sq.
Larger than 30x60 ... 5c. "

LEAD—DUTY: Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb.
Spanish ... 7c gold
German Refined ... 6¾c gold
English ... 6¾ @ 7c gold
American ... 6 @ 6½c gold
Bar ... dis 10 % ... 8¾c.
Pipe ... dis 10 % ... 9¾c.
Tin Lined Pipe ... dis 10 % ... 18½c.
Sheet ... dis 10 % ... 9¾c.
Shot ... dis 10 %. Drop, 9¾c. Buck, 10¾c.

BABBITT METAL.
N. P. U ... ₽ lb 8½ @ 9c
A, 25c.; B, 20c.; C, 15c.; D, 12c. ₽ lb.

SOLDER ... No. 1, 15c; No. 2, 13½ @ 14c

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb. over 11, 3¼ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.
Tool ... 15 @ 16c
Spring ... 10c
Homogeneous ... 12½c
Tire ... 12½ @ 13½c
Machinery (round and square) ... 10 @ 11c
File ... 11c
Sheet ... 14 @ 16c
Saw Plate, mill and mulay ... 14 @ 16½c
Saw Plate, gang and X cut ... 13 @ 14c
" circular as to size ... 18 @ 30c

Chrome Steel.
Tool ... ₽ lb 20 @ 21c
Tool, extra fine ... " 40 @ 75c
Spring ... ₽ lb 12c and upward
Machinery ... ₽ lb 14c
Hammer ... " 15c,
Gun or Homogeneous ... " 16c

English Steel.—payable in gold, net.
" Best Cast ... ₽ lb 17½c
" Extra Cast ... " 18½c
" Round Machinery, Cast ... ₽ lb 10½ @ 11½c
" Swaged, Cast ... " 19½c
" Best Double Shear ... " 17½c
" Blister, 1st quality ... " 14½c
" " 2d quality ... " 13 c
German Steel, Best ... " 11½c
do 2d quality ... " 10½c
3d quality ... " 9½c
Sheet Cast Steel, 1st quality ... " 17½c
" " 2d quality ... " 14½c
" " 3d quality ... " 12½c
File Steel, Flat and ½ Round ... " 12½c
" Square and Round ... " 12½c
" M... ... " 13½c
" Taper ... inch ... " 16c
" Taper 3 and 3½ inch ... " 18c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.
Silesian, cash ... 6¾ @ 7c., gold
American " ... 7½ @ 11c., currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 1·1c per lb.; Electro-galvanized Plates, 2 cents per lb; Manufactures of, not enumerated, 35 per cent. ad val. Bars, Block and Pigs, free. Banca, subject to duty of 10 per cent.
Banca ... ₽ lb 23½ @ 24c., gold
Straits ... ₽ lb 19½ @ 20c., gold
English ... ₽ lb 19½ @ 20c., gold

CHARCOAL TIN PLATE.
I C 10x14. Prime Charcoal ... 10·25 @ 10·50
12x12, " ... 10·75 @ 11·00
14x20, " ... 11·00 @ 11·25
I X 10x14, " ... 12·50 @ 12·75
12x12, " ... 13·00 @ 13·25
14x20, " ... 13·50 @ 13·75
D C 12½x17 " ... 9·75 @ 10·00
D X 12½x17 " ... 12·00 @ 12·25
For each additional X add ... 2·25

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary.
I C 10x14	$9·50 @ 10·00	8·75 @ 9·00	8·25 @ 8·75
I C 12x12	10·00 @ 10·25	9·50 @ 9·75	
I C 14x20	10·00 @ 10·75	10·00 @ 10·25	

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$9·25 @ 9·50	8·50 @ 9·00	8·00 @ 8·25
I X 14x20	11·75		
I C 20x28	19·50	17·00 @ 18·00	16·50
I X 20x28	24·00 @ 24·50		
I C 20x200	28·25 @ 28·50		

ZINC.—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet 2½c. ₽ lb.
Sheet ... cask 10¼c
" ... open 10½c

Old Metals.

(*Dealers' Selling Price.*)

Copper ... @ 20
Yellow metal ... 14 @ 15
Brass ... 13 @ 14
Heavy Composition ... 17 @ 18
Old lead, solid ... 6 @ 6¼
Tea lead ... 5
Wrought iron ... 1⅛ @ 1¾
Sheet iron ... 0¾ @
Cast iron ... 1 @ 1¼
Machinery iron ... 1½ @
Zinc ... 5 @ 5½
Pewter, No. 1 ... 17
" No. 2 ... 10 @ 12
Spelter ... 5 @

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters ... ₽ lb 20c
" " Ordinary ... 6c
" Ivory Drop, fair ... 12c
" " best ... 28c
Black Paint, in oil ... kegs, 8c.; ass't'd cans, 11 c
Blue, Prussian, fair to best ... 50 @ 75c
" " " in oil ... 35 @ 65c
" Chinese, dry ... 85c
" Ultamarine ... 25 @ 35c
Brown, Spanish ... 1½c
" Van Dyke ... 8c
Carmine, 40 ... $12 00
Green, Chrome ... 15 @ 28c
" " in oil ... 18 @ [illegible]c
" Paris ... good, 30c; best, 40c
" " in oil ... " 30c; " 45c
Mineral Paints ... 1¼ @ 4c
Orange Mineral ... 14c
Red Lead, American ... 9¾c
" " English ... 10½c
" Venetian (N. C.) dry ... 2½c
" " in oil ... ass't'd cans, 11c; kegs, 8½c
" Indian, dry ... 10c
Rose Pink ... 13c
Sienna, American, Raw ... 4c
" Burnt ... 4½c
" " in oil ... 16 @ 26c
" Raw " ... 15 @ 25c
Umber, Burnt ... 4 @ 8c
" " in oil ... 16 @ 21c
" Raw ... 3½ @ 7½c
" " in oil ... 16 @ 22c
Vermilion, Chinese ...
" English ... 1 10, gold
" Trieste ... 1 10 "
" American, Common ... 33c
White Lead, American, pure dry ... 10c
" " in oil ... 11c
White, Paris, English, prime ... in bbls. 2¼ @ 2½c
Yellow Ochre, French ... 2¼ @ 2¾c
" " " in oil ... ass't'd cans, 11c; kegs, 8½c
" " Vermont ... in casks 1½c
" Chrome ... 17 @ 27c
" " in oil ... 18 @ 28c
Zinc White, American No. 1 dry ... 9c
" " 1, in oil ... 11c
" French (Paris) ... 11 c
" " in oil ... 19

Oils.

Linseed Raw ... ₽ gal. casks, 65c. bbl., 68c
" Boiled ... " 70c. " 75c
Whale, Crude ... "
" Bleached Winter ... 80c
Sperm, Crude ... 1·65
" Winter unbleached ... 1·90
" " Bleached ... 2·00
Seal, Extra Refined ... "
Lard, Pure Winter ... 1·30
" Spring ... 1·20
Cotton Seed, Crude ... 60c
" Southern Yellow ... 65c
" White ... "
Neatsfoot, Winter ... 70c @ $1·10
Natural Lubricating ... 33c @ 40c

Sundries.

Asphaltum ... 9c
Benzine ... ₽ gal. 16c
Chalk ... 1¼c
" Block ...
Dryer, Patent, Am'n ... ass't cans, 10½c.; kegs 9c
" " English ... " 11c.; " 9
Flocks ...
Frostings ... 50c
Glue, White ... 33 @ 47c
" Sheet ... 30c
Glaziers' Points, Zinc ... 9c
Gum, Copal ... 35c
" Damar ... 28c
" Shellac, English ... 85c
" " " dark ... 33c
Litharge ... 10c
Pumice Stone, selected Lumps ... 4 @ 6c
" " powdered ... 4c
Putty in bladders ... 3½c
" in bulk ... 3c
Rotton Stone, soft, English ... 3c
Spirits Turpentine ... 34c
Whiting, Spanish ... 1⅛

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE THICK.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$7·50	$6·75	$6·25	$5·75
11 x 14 to 16 x 24	8·50	7·75	7·25	6·50
18 x 22 to 20 x 30	10·75	9·75	8·75	7·75
15 x 36 to 24 x 30	12·25	10·75	9·00	
26 x 28 to 24 x 36	13·00	11·50	9·75	
26 x 36 to 26 x 44	14·50	13·25	10·75	
26 x 46 to 30 x 50	15·00	14·00	11·25	
30 x 52 to 30 x 54	16·00	14·50	12·00	
30 x 56 to 34 x 56	17·25	15·50	13·50	
34 x 58 to 34 x 60	18·25	17·25	15·00	
36 x 60 to 40 x 60	20·75	18·75	17·25	

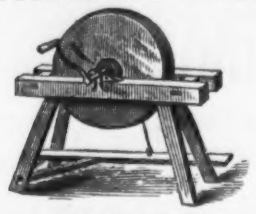
DOUBLE THICK.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$12·00	$11·00	$10·00	$9·25
11 x 14 to 16 x 24	13·75	12·50	11·75	10·50
18 x 22 to 20 x 30	17·25	15·75	14·00	
15 x 36 to 24 x 30	19·75	17·25	14·50	
26 x 28 to 24 x 36	21·00	18·50	15·75	
26 x 36 to 26 x 44	23·25	21·25	17·25	
26 x 46 to 30 x 50	24·00	22·50	18·00	
30 x 52 to 30 x 54	26·75	23·25	19·25	
30 x 56 to 34 x 56	27·75	25·00	21·75	
34 x 58 to 34 x 60	29·25	27·75	24·00	
36 x 60 to 40 x 60	33·25	30·00	27·75	

Sizes above—$12·00 per box extra for every 8 inches.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches will be charged in the 84 united inches bracket
Discount 50 @ 50&5 %.

Grindstones, Emery, &c.

Walter R. Wood,
GRINDSTONES.



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BEREA STONE CO., of Ohio.
NOVA SCOTIA and other brands.
283 & 285 Front Street, New York.

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LAKE HURON,
AND BEREA.

Also Scythe Stones.
WORTHINGTON & SONS, Mfrs.,
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BOYD & CHASE,
388 to 406 East 107th st., N. Y.,
The largest manufacturers in the world of
ARKANSAS & WASHITA OIL STONE.
Also, *Hindostan, Sand* and *other Stone.*
Send for circular. Orders solicited from the trade. Superior Hindostan Stone finished especially for Retail Trade.

EMERY WHEELS AND MACHINERY
Upon which to run the same, of all kinds.
EMERY Emery Cloth, Mill Stone CEMENT.
TRADE MARK.
DIAMOND Tools, Oil Stones
Soapstone Register Borders.
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UNION STONE CO.,
11 Exchange and 26 Devonshire Streets, Boston, Mass.

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THE LEHIGH VALLEY
Emery Wheel Co.,
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And Shaped Diamond Carbon Points, indispensable for Turning Emery Wheels, Grindstones, also Truing up hardened Steel and Paper Calender Rollers, &c. Address, J. DICKINSON, Patentee,
64 Nassau Street, New York.

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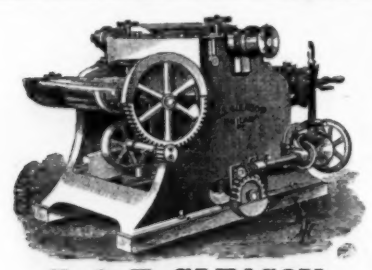
SELF-ADJUSTING

Simplest, Best and Cheapest Clothes Wringer in the World.
Steel Elliptic Springs.
T. J. ALEXANDER,
General Agent and Manager,
Office, Oliver St. cor. High, Boston, Mass.

Standard Bellows.
SCOTT'S.


E. & F. GLEASON,
Manufacturers of
IMPROVED WOOD TOOLS.
97 Haydock St., Philadelphia.

L. COES'
Genuine Improved Patent
SCREW WRENCHES.

Manufactured by
L. COES & CO.,
Worcester, Mass.

Established in 1839.
Registered March 31, 1874.

We invite the particular attention of the trade to our New Straight Bar Wrench, *widened*, full size of the larger part of the so called "reinforced or jog bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view), making the jaw fully equal to *any* strain the bar may be subjected to.

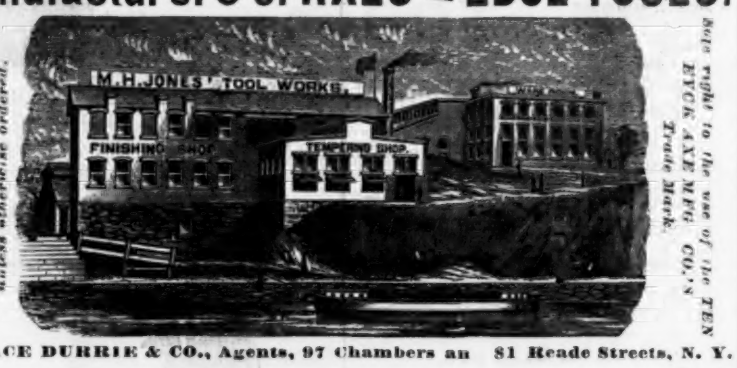
These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the *fact*, that in 1869 we made several *important* improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes which were *at once closely* imitated and sold as the *Genuine* Wrench by certain parties who seem to rely upon *our* improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be *good* evidence that we manufacture a superior Wrench, we wish the trade *may not be deceived* on the question of *originality*. Trusting the trade will fully appreciate our *recent* efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped

"L. COES & CO."

Warehouse, 97 Chambers St., & 81 Reade Sts., N. Y.
HORACE DURRIE & CO., Sole Agents.

M. H. Jones. A. G. Peck.
M. H. JONES & CO.
COHOES, Albany Co., N. Y.
Manufacturers of AXES AND EDGE TOOLS.



All goods stamped and labeled M. H. JONES & CO. unless otherwise ordered.
Suits right to the use of the TENEYCK AXE MFG CO.'S Trade Mark.

HORACE DURRIE & CO., Agents, 97 Chambers and 81 Reade Streets, N. Y.

CLINTON HORSE NAILS
PATENT HAMMER POINTED AND POLISHED
AUSABLE HORSE NAILS
HELLER & BROS.
FILES & RASPS
PROVIDENCE HORSE SHOE CO'S PAT.
TOE CALKS
POINTED & BLUED
HORSE NAILS

Ausable Horse Nail Co.
MANUFACTURERS OF
HAMMERED,
Hammer Pointed, Polished & Blued
HORSE NAILS,
FROM
BENZON IRON.
Orders promptly filled at lowest market rates.
ABRAHAM BUSSING, Secretary,
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GLOBE NAIL COMPANY,
MANUFACTURERS OF
Pointed, Polished & Finished Horse Shoe Nails
Recommended by over 20,000 Horse Shoers.
All Nails made from best NORWAY IRON, and warranted perfect and ready for driving. Orders filled promptly and at lowest rates by
GLOBE NAIL CO., Boston, Mass.

Acknowledged the Best.
The best machine by far, for the trade and the public.
"Champion."
Give universal satisfaction.
Is highly recommended by all dealers that keep it.

"Champion."
Everybody that has tried the "CHAMPION" prefers it to any other machine made.
Send for Price List.
CHAS. FELDER, 103 Chambers St., N. Y.

White Lead, &c.

John T. Lewis & Bros.,
No. 231 South Front St.,
PHILADELPHIA.

JOHN T. LEWIS & BROS. WARRANTED PURE WHITE LEAD. PHILADA.
TRADE MARK.
MANUFACTURERS OF
PURE WHITE LEAD, RED LEAD, Litharge, Orange Mineral, Linseed Oil
AND PAINTERS' COLORS.

ATLANTIC WHITE LEAD CO. ROBERT COLGATE & WARRANTED PURE.
TRADE MARK.
The Atlantic White Lead and Linseed Oil Company,
MANUFACTURERS OF
White Lead (Atlantic), Red Lead Litharge & Linseed Oil.
ROBERT COLGATE & CO.,
287 Pearl Street, New York.

Established A. D., 1777.
WETHERILL & BRO.,
Manufacturers of
White Lead, Red Lead, Litharge & Orange Mineral.
Offices, 31st. St. below Chestnut, PHILADELPHIA.

Brooklyn White Lead Co.

F. HOWE, Tr.
Office, No. 89 Malden Lane, NEW YORK.
TRADE MARK.
White Lead, Red Lead and Litharge.
89 Malden Lane, NEW YORK.
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JOHN JEWETT & SONS
Manufacturers of the well known Brand of
WHITE LEAD.

TRADE MARK.
Also Manufacturers of
LINSEED OIL
182 Front Street NEW YORK

AMERICAN TWIST DRILL CO.,
Woonsocket, R. I., & 15 New Church St., N. Y.
Sole Manufacturers of the celebrated
Diamond Solid Emery Wheel
Prices: 10x1, $2·90; 14x2, $9·75; 18x2½, $20·00; 30x3, $42·00.
All other sizes at proportionate prices. State diameter of Holes in your orders for Wheels.
MANUFACTURERS OF
PATENT EMERY WHEEL MACHINERY,
And Automatic Knife Grinders
For the rapid and perfect grinding of Planer, Paper Cutting, Leather Splitting and other long Knives.
These goods are unsurpassed for elegance of design, workmanship, capacity and durability. First premium awarded by American Institute, N. Y., 1870 and '73; Medal and Diploma by M. C. M. A., Boston, 1874.

Fast Cutting—Free from Glazing—It is the best Solid Emery Wheel.


Cor. N. 15 St. & Pennsylvania Ave., Phila.

E. HARRINGTON & SON,
Manufacturers of
ENGINE LATHES,
From twelve (12) to forty-eight (48) inches swing;
Hand Lathes; Wood Turning Lathes; Vertical Drills; Boring Mills; Tapping and Centering Machines; Screw Press for Mandrels Grindstone Boxes.

HAMMER & CO.,
Branford, Conn.,
Manufacturers of the following *Patented* Articles of
MALLEABLE IRON:
Hammer's Adjustable Clamps.
Hammer's Malleable Iron Oilers.
Hammer's Mall. Iron Hand Lamps.
Hammer's M. I. Hanging Lamps.
For Sale by all the principal Hardware Dealers.
Malleable Iron Castings
Of Superior Quality made to order.

Hardware.

SPEAR & JACKSON,

Sheffield, England,

MANUFACTURERS OF

Saws, Files, Edge Tools and Steel.

JOHN L. FISHER. Agent

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ALFRED FIELD & CO.,

Hardware Commission Merchants,

IMPORTERS AND EXPORTERS.

Principal Offices and Warehouses:

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A large line of Birmingham and Sheffield goods in stock at

93 Chambers St., N. Y., & 75 Gravier St., New Orleans.

HERMANN BOKER & CO.,

OFFICES AND WAREHOUSES:

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REMSCHEID and SOLINGEN (Prussia.) H. BOKER & Co.
SHEFFIELD (England), No. 3 Arundal Lane, Represented by Mr. ARTHUR LEE.
LIEGE (Belgium), Represented by Mr. LOUIS MULLER.

Manufacturers and Importers of **Cutlery, Guns, Hardware** and **Railroad Material.**
Proprietors of **TRENTON VISE AND TOOL WORKS, Trenton, N. J.**—Vises, Picks, Mattocks, Grub Hoes, Sledges, Hammers, Bridge Work, Turn Tables, etc.
Proprietors of the **MANHATTAN CUTLERY CO.,** "O. K." Razors.
Sole Agents for **LAMSON & GOODNOW MFG. CO., Shelburne Falls, Mass.**—Table Cutlery and Butcher Knives.
W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.
Geo. Wostenholm & Son's Knives, Scissors and Razors, the largest stock in the U. S.
John Wilson's Butcher and Shoe Knives.
Peter Wright's and Armitage Anvils.

We always have on hand a full assortment of

German and English Hardware, Cutlery, Guns, Gun Material, Chains, Heavy Goods.

ROY & COMPANY,

West Troy, N. Y.,

Manufacturers of

Wrought Iron Butts, Strap and T Hinges,

PLATE AND HOOK HINGES,

Cold Pressed Nuts and Washers, Felloe Clips, &c.

CROOKE & CO.,

MANUFACTURERS OF

WROUGHT IRON BUTTS,

All our goods are manufactured from patent faced iron plates; they have a smooth face and bright finish.

163 & 165 Mulberry Street. New York.

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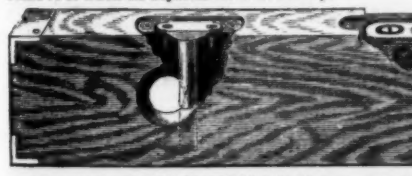
CAST STEEL CORN HOOKS.

The blades are polished and ground to Sharp Cutting Edge ready for use. The handles are of first-class timber with square end, and are firmly strapped and rivetted to the Blade, and are as pronounced by the trade the Best and most durable article in the market. Packed in barrels of seven dozen each.

Sole Agents for STANDARD RULE CO.'S

Boxwood, Ivory, Ebon, and Patent Party Color



RULES,

Adjustable & Non-Adjustable

PLUMBS & LEVELS.

Their Adjustable Level is the Simplest, Strongest and most Reliable one in the market.
The Spirit Glass is in a metallic case of such a shape at each end as to exactly correspond and bear easily upon perfect curve of a recess formed in the stock for its reception. The case is secured at each end to the stock by a strong screw. When the Level requires adjustment the top plate is removed, one screw is loosened and the other driven until required position is reached. The Plumb Glass is arranged on the same principle. The Top Plate protects the adjustment against thoughtless or mischievous persons, the security being well worth the trouble required to remove it when an adjustment is necessary.

Agents for *CORBIN & DREW'S* Rivets and Tacks. *RIPLEY MFG. CO.*, Mallets, Mouse Traps, Bung Starts, &c. *ATWATER MFG. CO.*, Carriage Hardware. Clips, Couplings, &c. *VALLEY HARDWARE CO.*, Bow Pins, Bull Rings, Saw Setts, &c. *AMERICAN LOCK MFG. CO.*, Store Door Locks, Padlocks, &c. *R. HUMPHREY & CO.*, Spoons, Ferrules and Tin Washers.

MANUFACTURERS OF

Nuts, Washers, Machine, Stove, Carriage, Plow and Agricultural Bolts, &c., &c.

UNION NUT CO., 78 Beekman Street, N. Y.

Factory, UNIONVILLE, CONN.

CONCORD TRADE (CONCORD USE N.H.) MARK. AXLES

Will Run Easier, carry a Larger Load, and Wear Longer than any other Axle in the Market.

All GENUINE Concord Axles are stamped with above trade mark. Manufactured only by

D. ARTHUR BROWN & CO., Fisherville, Concord N. H.

JOHN WILSON'S CELEBRATED

GRANTED A.D. 1766, BY THE CORPORATION OF CUTLERS OF SHEFFIELD, AND PROTECTED BY ACT OF PARLIAMENT.

BUTCHERS' KNIVES,
BUTCHERS' STEELS,
AND
SHOE KNIVES.

THE TRADE MARK, IN ADDITION TO THE NAME, IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY

JOHN WILSON.

BUYERS ARE SPECIALLY CAUTIONED AGAINST IMITATIONS OF THE MARK, AND THE SUBSTITUTION OF COUNTERFEITS BEARING THE NAME, "WILSON," ONLY.

Works:—SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750.

EDGAR'S PAT. "GEM" STOVE SHOVEL.

Strong, Durable, Cheap. Sells at Sight.

For Sale by all *Jobbing Houses.*

EAST RIVER SHEET METAL MFG. CO.

Sole Manufacturers,

253 Pearl Street, N. Y.

KIMBALL'S PATENT

Solid Cast Steel

Shovels and Spades.

Especially Adapted to

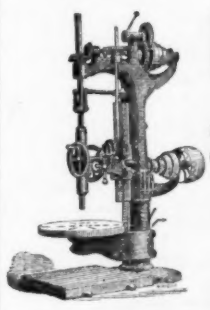
Railroads, Turnpikes & Mining.

Upon the principle they are made, these Shovels will stand more severe usage and last longer than any Shovel in the market.

Manufactured by

KIMBALL SHOVEL CO.,

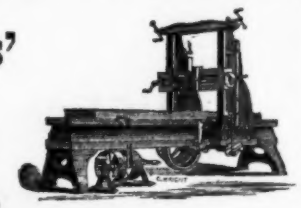
P. O. Box 527. Baltimore, Md.



Fitchburg Machine Co.

Manufacturers of

Machinists' TOOLS.



Office and Works,

Sumner Street,

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The American Ice Chisel

Is superseding all others. It will save your time, save your ice, save your refrigerator, save your money. It shave more rapidly than a Crusher, and splits as true as a saw. The blade is of the best English Steel, carefully tempered and plated to prevent rust. Address orders,

THE AMERICAN ICE CHISEL,

100 Chambers Street, or P. O. Box 1402, New York.

VERONA TOOL WORKS.

Metcalf, Paul & Co.,

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Manufacturers of

RAILROAD TRACK TOOLS

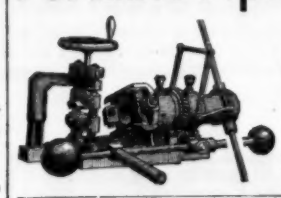
Blacksmiths', Mining and Masons' Tools.

Also the VERONA NUT LOCK,

An Oil-Tempered Steel Spring that takes up Expansion of the Bolt, and keeps a perfectly tight joint. Solid Steel Tamping and Clay Picks.

Portable Pipe & Bolt Threader & Cutter

PRICES FROM $80 UP.



Address, EMPIRE MFG. CO., 48 Gold St., N. Y.

For Sale by

REDFIELD, BOWEN & WALWORTH CO., Chicago, Ills.
BULL & CO., Indianapolis, Ind.
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JOSHUA HENDY, San Francisco, Cal.
REUTER & MALLORY, Baltimore, Md.
WALWORTH MFG. CO., Boston, Mass.
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LOVEGROVE & CO., Phila, Pa.

RICHARD DUDGEON,

No. 24 Columbia Street, New York,

MAKER AND PATENTEE OF

Hydraulic Jacks and Punches,

ROLLER TUBE EXPANDERS

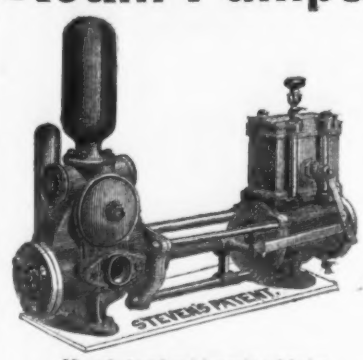
And Direct-Acting Steam Hammers.

Communications by letter will receive prompt attention.

JACKS for Pressing on Car Wheels or CRANK PINS made to order

DIRECT-ACTING

Steam Pumps,



Manufactured and for sale solely by

STEELE & CONDICT,

TITAN IRON WORKS, Jersey City, N. J.

Office and Salesroom

88 Liberty Street, New York.

No auxiliary valves used. Direct connection between piston rod and valve movement. No knocking or jarring. Circulars and price lists sent upon application.

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Branch Office, cor. F and 7th Sts., Washington, D. C

CLARK TOMPKINS

Manufacturer and Patentee of

UPRIGHT ROTARY Knitting Machines,

Cone Winders for Hosiery Yarns,

NAPPERS FOR HOSIERY GOODS,

Stop Motions & Alarms for Knitting Machines,

Flock Cutters, and Flock Renovators.

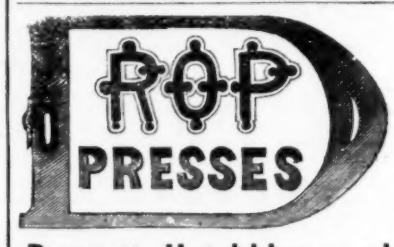
EXTRA PARTS FURNISHED PROMPTLY.

☞ I am also prepared to furnish anything in the line of Gear Cutting from 5¼ feet to ⅝ of an inch in diameter, any shape of tooth desired; Racks, Worms, Worm Wheels, Screws any size or number of threads to the inch. Wood Planing, Iron Planing, Large Lathe Work, Gear Cogging, Shafts, Hangings and Pulleys, also all kinds of Mill Work, Jobbing, and Machinery in general.

Shop, Foot of Cypress St., Troy, N. Y.

Particular attention paid to Experimental Machinery. We aim to maintain our reputation for doing work well.

Corner **Adams & John Sts., Brooklyn, N. Y.**



Bennett Hotchkiss and N. C. Stiles' Patent.

This Drop (which has been illustrated in this journal of that class in which the Hammer is raised by a stiff belt or board passing up between two friction rolls, and is so well known that we will only describe our improvements. The patents we are working under are those of BENNETT HOTCHKISS (who in an interference case with Goulding and Cheney was declared the first inventor) and N. C. STILES. Our improvements consist:

First.—Of an arrangement of parts that makes it the most complete Jobbing Hammer, and will take the place to a great extent, of all other kinds for forging. In addition to the upright rod, which is operated by the hammer to open and close the rolls, we place another rod the lower end of which is secured to the end of a lever which is operated by the hand or foot, which operation also opens and closes the rolls at will. The lower end of this rod has a slot, so that the action of the hammer will not disturb the hand lever, thereby preventing the hand being injured, as otherwise would be the case.

Second.—No dog is used on the upright to hold up the hammer. The belt or board passes up between two clamps located under the rolls, so arranged that as the hammer rises they will freely open of themselves, but on descending they will close and hold up the hammer. To let the hammer fall the clamps are opened by pressure upon the foot treadle.

Third.—The board or belt is secured to the hammer by an elastic connection, which prevents the sudden jar and destruction of the same. The back roll is made adjustable to different thicknesses of board or belt, as also are the clamps. An adjustable collar on the upright rod allows the operator to obtain *any hight* of blow desired automatically. If one blow is wanted, press upon the treadle and remove the pressure as soon as the blow is given. Keep the foot upon the treadle and the blows will be repeated until the pressure is removed. If a blow of less hight than the collar is set for is required work the hand lever, which will give you any hight of blow desired. The hammer can be held up at any point below the collar by bringing the hand lever into action when the hammer is at the desired hight, so that the next blow can be given from a state of rest, of less hight than the collar is set for. This is a feature no other drop has; that is, the first blow struck can be of less hight than the second or third, and obtained from a state of rest. A gentle pressure upon the treadle will allow the hammer to go down slowly, but it will stop and remain suspended at any point as soon as the pressure is removed.

The clamps in holding up the hammer keep the boar from touching either roll and prevents the same from being worn uneven.

Manufactured only by the

Stiles & Parker Press Co.,

MIDDLETOWN, CONN.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 0 per cent. per annum.

Anvils.—Solid Cast Steel.....₩ ℔ 14c
Peter Wright's, (Advanced April 1st.)₩ ℔, gold, 11½c
Wilkinson s..... " 11c
Eagle.....list 11 cents—dis 20 @ 20&10 %
Apple Parers.—Union.....per doz $7 50
Skeleton ..... " 7 50
Victor..... " 7 75
Domestic ..... " 7 75
Reading ..... " 7 75
Bay State Paring, Coring and Slicing..... " 12 00
" " Peach Parers..... " 10 50
Axes.—Mann's Light.....Per doz. $12 00 @ 11 50
Hunt's Light..... " 14 00 @ 13 50
Red Indian, all sizes..... " 12 00 @ 11 50
Red Chiertain, all sizes..... " 12 50 @ 12 00
Crown Prince..... " 12 50 @ 12 00
Augers and Auger Bits.—Pierce's Pat. Twist Bits.....dis 30 %
Douglass' & Ives' Bits.....dis 40&10 %
Connecticut Valley Auger Bits .....dis 40&10 %
Cook s Bits.....dis 40 10&10 %
Jennings' Bits.....dis 10 %
Bates' Nut Augers.....dis 40&10 %
Douglass' & Ives' Augers.....dis 40&10 %
Watrous' Ship Augers.....dis 10&15 %
Bonney's Pat. Hollow Augers.....dis 25 %
Stearns' Patent Hollow Augers.....dis 25 %
Balances.—
Landers, Frary & Clark's..... } Sold on Morton's new
Morton's..... } List.....dis 50 %
Chattillon's.....
Common Spring with Hook..... ₩ doz $1 38 @ 2 00
Bells.—bevin Bros. Mfg Co. Light Hand Bells.....dis 70 %
Common (Tissue Paper Weight).....dis 70&10 %
Swiss Pattern Hand Bells.....dis 50 %
Connell's Door Bells.....dis 50&5 @ 50&10 %
Gt. Western & kentucky Cow. . dis 50&10 @ 50 10&5 %
Boring Machines.—Bates' Mfg. Co., complete with augers.....dis 20 @ 25 %
Douglas Mfg. Co., complete with augers..dis 20 @ 25 %
Common Boring Machines, no Augers.....$4 00 @ 3 75
Angular " " ..... 5 00 @ 4 75
Bolts.—Eastern Carriage Bolts .....special prices
Western " " .....
Philadelphia " " .....dis 60 %
" Eagle, (Coleman's).....dis 60 %
Wrought Shutter, Stanley.....dis 50 @ 50&10 %
Braces.—Barber s.....dis 40&5 %
Backus.....dis50 %
Bartholomew s American Ball... dis 10&10 @ 15&10 %
Spofford.....dis 50 %
Butts.—Cast Fast Joint, Narrow... dis 25&10 @ 30&10 %
" " Broad.....dis 35&10 @ 40&10 %
Cast Fast Loose Joint.....dis 45&10 @ 50&10 %
" Acorn, Loose Pin.....dis 4 &10 @ 45&10 %
" Mayers & Parliament.....dis 35&10 @ 40&10 %
" Acorn Jap'd.....dis 40&10 @ 45&10 %
Wrought Loose Pin.....dis 35&10 %
" Table Hinges and Back Flaps.....dis 40&10 %
" Narrow.....dis 30&10 %
" Loose Joint.....dis 35&10 %
Parker's Blind Butts.....
Sheperd s " .....
Garretson's " ..... } Discount 50&10 % by the case
Clark's " .....
Lull & Porter's " .....
Garretson's Blind Butts Light No. 0..... } Discount 60 %
" Lull & Porter Pattern } By the case
Cherrytree Blind Butts ..... } 60&10 %
Chains.—German Halter.....dis 20 %
" Coil.....dis 20 %
Galvanized Pump..... net 13 @ 13½c
Best Proof Coil Chain—
₩ ℔... 14 10½ 9½ 9 8¾ 8½ 8c gold
3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ in.
By the cask, 560 lbs., ½c per lb. less Common Chain. ¼c per lb. less.
Chisels.—Socket Framing.....dis 60 @ 60&10 %
Socket Firmer.....dis 60 @ 60&10 %
" Tang .....dis 40&10 @ 50 %
Beaty s Framing and Firmer.....dis 2 %
Casters.—Iron Bed.....dis 30&10 @ 40 %
Porcelain Wheel Bed.....dis 30&10 @ 40 %
Iron and Brass Wheel Plate.....dis 40 @ 40&10 %
Porcelain Wheel " .....dis 50 @ 50&10 %
Clothes Wringers.—Universal.....per doz $64 00
Novelty. " 64 00
Discount on 2 dozen lots, $2 per dozen.
Coffee Mills.—Common Box and Side.....dis 15 %
Patent Box and Side.....dis 15 %
Cutlery.—American Pocket (best).....dis 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices.
Drawing Knives.—Hart Mfg. Co. 5.....dis 60 %
Adjustable Handle.....dis 10 @ 15 %
Beatty.....dis 15 @ 20 %
Fry Pans.
Tinned.....dis 40 @ 45 %
₩ doz..$3 50 4 00 4 50 5 00 5 50 6 50 7 50 9 00 10 00
No..... 0 1 2 3 4 5 6 7 8
Burnished.....dis 40 @ 45 %
₩ doz..$3 00 3 75 4 25 4 75 5 25 6 00 7 00 8 00 9 00
No..... 0 1 2 3 4 5 6 7 8
Files.
Nicholson Mill Files.....new list
" Bastard..... "
" Taper..... "
Butcher's Mill (Advanced March 5th)...$5 25 to £ gold
" Bastard..... 5 25 to £ gold
" Taper..... 5 25 to £ gold
Fluting Machines.
E. F. M.—4½ in. rolls, $5 50.....dis 15 %
" —6 in. rolls, $6 50.....dis 15 %
Mrs. Knox—4 in. rolls, $5 25.....dis 20 %
" —6 in. rolls, 7 00.....dis 20 %
Hammers.
Yerkes & Plumb's.....dis 15 %
Hammond & Son's.....dis 15 %
Vevec.....dis 20 %
Hatchets.
Beatty's.....dis 15 @ 20 %
Shingling and Half. { ₩ doz..$7 00 7 50 7 75 8 00
{ No..... 1 2 3
Yerkes & Plumb.....dis 15 %
Shingling and Half. { ₩ doz..$7 00 7 50 8 00 8 50
{ No..... 1 2 3 4
Claw.... { ₩ doz.....$7 50 8 00
{ No..... 1 2 3
Hinges.
Strap and T, (Changed March 24).....dis 45 %
Horse Nails. Nos. 6 7 8 9 10
Ausable..... 27 25 24 23 22
Globe..... 28 26 25 24 23
Brundage..... 26 24 23 22 21
Nos. 5 6 7 8 9 10
Putnam..... 32 28 26 25 24 23
On Ausable, Globe and Brundage 1000 ℔ lots.....dis 5 %
Knobs.—Door, Mortise and Rim.
Makes in Combination.....new list dis 45&5 %
Extra discount for cash 2 %
Mineral and Rim.....dis 5 %
Locks and Latches.—Rim and Mortise.... dis 45&5 %
Extra discount for cash 2 %
Till and Cupboard.....dis 25 %
American Padlocks.....dis 50 %
Scandinavian Pad Locks.
₩ doz.....$10 50 10 50 12 00 12 00 15 00 15 00 } dis 15 %
No..... 9 9½ 10 10½ 11 11½ }
₩ doz..... $18 00 18 00 22 00 22 00 } dis 15 %
No..... 12 12½ 13 13½ }
Trunk Locks.....dis 5 @ 10 %
Thumb and Rogrens Latches.....dis 25 %
Lanterns.—Square Candle and Oil.....dis 10 %
Globe for Oil.....dis 10 %
" Kerosene.....dis 10 %
Tubular Lanterns.....dis 10 %
Mattocks.—Long and Short Cutter.....dis 25 %
Western Pattern.....dis 25 %
Pennsylvania Pattern.....dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 60&10 @ 65&10 %
Lincoln's " .....dis 40&10 @ 50 %
Landers, Frary & Clark's Petroleum.....dis 15&10 %
Taylor's Petroleum Faucets.....dis 20&10 %
Brass Liquor Cocks .....dis 20&10 %
Meat Cutters.—Dixon's.....dis 15 %
Woodruff.....dis 15 %
Stowe.....dis 15 %
Hale's.....dis 25 %
Stuffers.....dis 10 %
Planes.—Auburn Tool Co. "Bench" .....dis 40 %
Second Quality.....dis 50 %
Metallic Plane Co.....dis 25&5 %
Evans Pat. Circular.....net
Plumbs and Levels.
Adjustable.....dis 60&10 %
Non-Adjustable.....dis 60, 10&10 %
Plane Irons.—American.....list net
Butcher's.....gold £, $5 50
Picks.—Philadelphia.....net
Pittsburgh. .....net
Rules .....dis 60, 10&10 @ 70 %
Rakes.—Cast Steel Garden.....dis 40 @ 40&5 %
Malleable Garden.....dis 40 @ 40&5 %
Wood Head Iron Teeth.....dis 40 %
Steelyards.—American Pattern.....dis 15 %
₩ doz.....$5 50 7 00 9 00 10 00 11 00 12 00
No..... 50 100 150 200 250 300
English Pattern.....dis 15 %
₩ doz.....$7 00 8 67 10 67 12 67 14 67 16 67
No..... 50 100 150 200 250 300
L. F. & C. Excelsior.....dis 10 %
₩ doz.....$9 00 10 00 12 00 15 00 18 00 21 00
No..... 50 100 150 200 250 300
Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened..... ₩ doz. $10 00 net
Golden Clipper No. 10, Boxed and Sharpened..... ₩ doz $9 75 net
Green Clipper No. 5, Boxed and Sharpened..... ₩ doz $9 50 net
Common Scythes..... ₩ doz $7 50 @ 9 00
Squares.—Steel and Iron, new list.....dis 50 %
Saws.—Disston's Cross Cut.....dis 15 %
Disston's Hand.....dis 12½ %
W. McNiece s H'd, Cross-Cut & Circ'r, new list. dis 15 %
Boynton's Lightning, new list.....dis 40 %
" Champion.....dis 45 %
Shovels and Spades.
Rowland's Plain Back, Jan. 23d.....dis 25 %
" Back Strap " .....dis 25 %
Oliver Ames & Sons.....new list dis 12½ %
Brady Shovel Co.....dis 12½&5 %

Sad Irons.—Richmond (polished face).....per lb. 8½c
Richmond (polished face)... ... by the cask " 8¼c
Stone.—Arkansas Oil, No. 1..... ₩ ℔ $1 75
Turkey Oil, No. 1..... " 1 00
Washita Extra..... " 30c
" No. 1..... " 22c
" " 2..... " 18c
..... " 5½c
Screws.—Iron.....new list, April 1st, 1875. dis 62½ %
Brass.....dis 52½ %
Spoons.—
Plated.....dis 40&10 @ 50 %
Britannia, Boardmans (new list) .....dis 50&10 %
" Parkers (old list) .. ..dis 50 %
German Silver.....dis 30 %
" Light.....new list dis 35 %
Lalance & Grosiean Iron.....dis 10 %
Springs.—Gray's Door.....dis 50 @ 50&10 %
Torry's Door.....dis 50 @ 50&10%
Stocks and Dies. .....dis 10&5 %
Stove Polish.—Gem.....₩ gross, $5 00
Onyx.....$5 00
Try Squares.—Winterbottom.....dis 10 @ 15 %
Stanley Rule and Level Co.....dis 45&10 %
Willis Thrall, No. 2.....dis 30&10 %
Disston's No. 2.....dis 40 %
Tacks, &c.—Half Weight Tacks.....dis 72½ %
" " by the case...dis 72½&7½ %
Clout and Finishing Nails.....7½ %
" " by the case.....dis 7½ %
Traps.—Genuine Oneida—Newhouse list.....dis 30 %
Imitation " " .....dis 30 %
Vises.—Solid Box, currency..... ₩ ℔ net 14c
Wrenches.—Coes Genuine.....dis 40 @ 40&5 %
Coes Imitation Wrought Bar .....dis 50&50 % 10 %
" Malleable Bar.....dis 60&10 %
" (Kellogg) Malleable Bar.....dis 65&10 %
Tafts Pattern (Wrought Bar).....dis 70 @ 70&10 %
Philadelphia Tool Co.'s Pat. Duplex.....dis 25 %
" " Improved Baxter.....dis 25 %
" " Adjustable Fork.....dis 25 %
Wire.—No. 0 to 18.....(Advanced April 24th)....dis 40 %
No. 19 to 26..... " " ...dis 47½ %
No. 27 to 36..... " " ...dis 52½ %
Coppered 0 to 12.....dis 15 @ 30 %
Tinned Broom Wire.....dis 25 %
Galvanized Wire No. 1 to 18 .....dis 40 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

June 1, 1875.

Augers—Snell Mfg. Co.....dis 25 %
Bits, Auger—Snell Mfg. Co.....dis 25 %
Phœnix .....dis 40 %
Bells, Cow—Yaw s Genuine.....dis 30 %
Bolts—Carriage and Tire.....dis 30 %
Braces—Bit, Spofford's Patent.....dis 75&5 %
Brads, Cut.....dis 50 %
Boards—Stove, Brooks' Patent.....dis 50&7½ %
Butts—Brass.....dis 35 %
Wrought Narrow.....dis 30 %
" Broad, Loose Joint.....dis 30 %
" Table and Back Flaps.....dis 35 %
Wrought Butts, Loose Pin.....dis 30 %
Belting—Rubber.....dis 25 %
Leather, new list, oak tanned.....dis 30 @ 10 %
Brick—Bath (box of 2 doz) Best English..... $1 25
" Rutherford $1 00
Can Openers—Sprague's.....dis 50 %
Cases—Parlor Coal Hod.....dis 10 %
Chalk—White, Carpenter s .....₩ gross, 57c
Red, Carpenter's " 90c
Blue, " $1 00
Chisels—Firmer Socket.....dis 60, 10&10 %
Framing Socket.....dis 60, 10&10 %
Corner Socket Chisels.....dis 60, 10&10 %
Slick's Carpenters'.....dis 60, 10&10 %
Castings—Malleable .....dis 60, 10&10 %
Egg Beaters—"Peerless" .....₩ ℔ 10c
"Centripetal" .....per doz $3 60
Elbows—Corrugated..... 5 5½ 6 7 } per doz 5 00
Charcoal..... $3 50 4 50 5 25 6 50 } dis 10 %
Russia..... 7 00 9 50 12 00 14 00 }
Files—Maischoss Bros.....dis 50 %
Fluters—Geneva Hand.....₩ doz. $15 00
Freezers Ice Cream "Champion .....dis 33½ %
Hammers—Henry W. Kip's.....dis 7½ %
Hinges, Gate—Shepard's.....dis 40&10 %
Hinges—Window Blind—
Shepard's and Standard.....dis 60&10 %
Wrought Strap and T.....dis 33½&10 %
Hods, Coal—Plain ,Black and Galvanized.....dis 10 %
Funnel, Black and Galvanized.....dis 10 %
Fancy and Helmet.....dis 10 %
Sad Irons.....dis 10 %
Kettles—Brass.....8¾c
Copper, "Hand Made".....₩ ℔, 43c
Enameled.....dis 40 @ 45 %
Knives, Drawing—Oval No. 1.....dis 50&10 %
Razor Blade.....dis 60, 10&10 %
Lanterns "Peerless. ....No. 1 2 3 10
₩ doz $35 00 $10 50 $13 75 dis 10 %
Tubular $11 00
" with Guards.....11 50
Machines—Apple Paring, "Turn Table" ..... 7 75 ₩ doz
Machines, Boring—Snell's.....dis 20 %
Mills, Coffee—Box and Slide, common.....dis 15 %
Box Union and Eagle.....dis 15 %
" American .....dis 15 %
Molasses Gates—"Self Measuring".....dis 20 %
Nails—Clout and Finishing.....dis 20 %
Shoe.....dis 7½ %
Horse, Ausable.....No. 5 7 8 9 10
50 27 25 24 25 22c
" " Pointed & Polished.....add 1c ₩ ℔
" " 1000 lbs.....
" Clinton.....No. 5 7 8 9 10
21 19 18 17 16c
Packing—Rubber.....dis 30 @ 10 %
Paint—White Lead, U. S. Gov't.....₩ ℔ 8¾c
Rivets—Iron, Black and Tinned.....dis 25&7½ %
Rope—Manila, ½ inch and larger.....₩ ℔ 14¾c
Sisal, ½ inch and larger.....11¾c
Jute, all sizes.....9¼c
Screws—"American Screw Co"—
Flat Head, Iron.....dis 62½ %
Flat Head, Brass.....dis 52½ %
Skates and Straps—White's.....dis 20 %
Spoons, Iron Tinned.....dis 10 %
" by the case.....dis 20 %
Plated Rogers' A No. 1.....dis 50 %
Britannia.....dis 50&5 %
Squares—Steel and Iron.....new list 50 %
Scales—Buffalo Scale Works.....dis 25 %
Fairbanks.....dis 15 %
Stove Polish—Gem.....₩ gross, $4 50
" Dixon's.....6 00
Trap, Steel—Newhouse.....dis 20 %
Tacks—Half Weight Am. Iron.....dis 72½&7½ %
Vases—Palace Conn.....dis 10 %
Vises—Parallel, Buffalo.....dis 30 %
Ware—French, Tinned and Iron.....dis 30 %
Stamped and Japanned.....dis 25 %
Cast Iron Hollow.....dis 5 %
Tin Plates.—Add for each X.....dis 33½ %
10x14, IC, Charcoal...$11 00 | 14x20 C, terne.....$10 00
12x12, " ... 11 50 | 20x28 C, " 20 50
12½x17, " ... 11 00 | 20x28 X, " 23 00
14x20, " ... 12 00 |
Pig Tin—Straits.....35c @ 36c
Bar Tin.....27c
Solder—No. 1, Crook's.....16½c
Refined, No. 1, 15½c; No. 2.....14½c
Sheet Zinc—
"Lasalle".....570 100 ℔ casks
$10 75 11 05 ₩ 100 ℔
Sheets.....$10 75
Iron Wire—Bright and Annealed.....dis 45 %
Coppered.....dis 40 %
Tinned.....dis 25 %
Tinned Broom, { Nos. 20 21 22 } dis 30 %
{ 20c 21c 21c }
Copper—Sheathing 14 @ 18 oz.....₩ ℔ 30c
Planished..... ₩ ℔ 37c @ 39c
Bottoms..... ₩ ℔ 35c
Bolts..... ₩ ℔ 31 @ 33c
Braziers' Sheets..... ₩ ℔ 31 @ 33c
Sheet Iron.—
18 Common.....$4 30
24 Common.....4 50
24 W. D. Wood & Co., Smooth Finish.....5 30
Am. Russia..... A. B.
14c 11c
Gen. Russia, No. 1 stained.....16½c
" " clean.....14½c
Galvanized..... dis 33 %

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal.....$12 00 @ 13 00
I. X. 10x14 Charcoal..... 14 50 @ 15 00
I. C. Terne 14x20..... 10 50 @ 12 50
I. C. Terne 20x28..... 22 00 @ 25 00
I. C. Continuous..... 23 00
Block Tin.—
Pig.....₩ ℔ 28c
Bars.....₩ ℔ 31c
Solder.—
A 1.....₩ ℔ 18c
Roofing.....₩ ℔ 17c
S. & Co.....₩ ℔ 22c
Lead.—Pig.....₩ ℔ 7½c.
Bar.....₩ ℔ 8½c
Copper.—
Ingot.....₩ ℔ @ 24c
Planished..... " @ 39c
Sheathing..... " @ 33c
Copper Drops..... " @ 33c
Sheets, 6 to ₩ lb..... " @ 38c
" 10 to 12 oz..... " @ 35c
Braziers, 13 lb..... " @ 32c
Copper Bottoms..... " @ 33c
Zinc. Cask, 500 to 1000 lbs.....₩ ℔ 10½c
Case, 100 lbs..... " 11 c
Slab..... " 7½c
Brass.—Roll, No. 6 to 20.....₩ ℔ 30c
Roll, No. 20 to 38..... " 35c
Wire, No. 0 to 20..... " 35c
" 20 to 25..... " 40c
Babbit Metal.—Sellew & Co..... " 35c
Aliens'..... " 20c
Market..... " 12c
Antimony.....₩ ℔ 17c
Bismuth.....₩ ℔ $4 00
Nickel.....₩ ℔ $2 50
Sheet Iron.—Gen. Russia.....₩ ℔ 20c
Planished A.....₩ ℔ 14c
" B..... " 12½c

	Com. B.	Smooth Fin. S. L. U.	Smooth D Re'fd.
15 to 20	4 3-10	5 5-10	7 3-10
22 to 24	4 4-10	5 4-10	7 4-10
26	4 50	5 50	7 5-10
27	4 75	5 75	7 75

Galvanized Iron.—Full oundies.....dis 25 %
Nos. 15 to 20.....12c | No. 26.....14c
22 to 24.....13c | 27.....15c
Bar Steel.—Silver, ₩ ℔ 16c; Crescent, 21c.
Iron Wire.....dis 35 %
Enameled Ware.....dis 45 %
One Piece Corrugated Elbows......dis 10 %

Chalcoal Iron.		Russia Iron.	
4½ inch.....	₩ doz $2 50	4½ inch.....	₩ doz $5 00
5 "	" 3 50	5 "	" 7 00
5½ "	" 4 50	5½ "	" 7 50
6 "	" 5 25	6 "	" 12 00
7 "	" 6 50	7 "	" 14 00

Leader Elbows, Flat Crimp Retinned or Galvanized.—Dis. 10 %

	₩ doz.		₩ doz
2-inch.....	$1 75	2½-inch.....	$2 75
3-inch.....	2 25	3½-inch.....	3 25
4-inch.....	2 50	4½-inch.....	3 87

Sheet Iron Bread Pans.....₩ ℔ 10c
American Broilers.....₩ doz. $13 50
Tinmen's Machines.....dis 5 %
Sad Irons.....₩ ℔, 3½c
Brass Kettles.—Ansonia.....48c
Dog Irons.....4 c

PITTSBURGH.

The following are the Card rates of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St., New York, Agent. Iron, standard list assorted sizes, for large orders, c, card rate, 2 % off net.
Flat Rail (1½x¼), punched and coun'sunk..4c ₩ ℔ net
Iron Wedges.....4½c ₩ ℔ net
Norway Nail Rods.....9½c ₩ ℔ net
Crow Bars (in ordering please state whether "Wedge" or "Pinch" point).....5c ₩ ℔ net
Beetle Rings.....8¾c ₩ ℔ net
Fence Pickets—
¾ round, bent to shape, 80c ₩ ft. of fence, less 15 % off net.
Discount off Standard List.
Carriage and Tire Bolts (new list).....70&10 % off net
Plow Bolts.....30, 10&5 % off net
Stove Bolts.....15 % off net
Machine and Square Head Bolts.....30&10 % off net
Coach and Lag Screws.....30&10 % off net
Bolt Ends.....35 % off net
Pat. Hot Pressed Square and Hexagon Nuts, small sizes, from 3-16 to ⅝ in.....7½c ₩ ℔ off net
Pat. Hot Pressed Square and Hexagon Nuts, large sizes, from 7-16 to 2 in.....c ₩ ℔ off net
Washers, all made from new band iron, small sizes, from 3-16 to ⅝ in.....c ₩ ℔ off net
Washers, all made from new band iron, large sizes, from 7-16 to 1⅜ in.....7 c ₩ ℔ off net
Nuts and Washers in 25 lb. boxes, 1c ₩ ℔ ex. Nuts and Washers in lots less than one keg each size, 1c ₩ ℔ ex.
Nuts and Washers in 5 lb. boxes, 1½c. ₩ ℔ ex.
Harrow Teeth, in lots of 1 ton or more, packed in casks, 1 in. diam. 3¾c ₩ ℔ net; ⅞, ¾ in. diam. 3¼c ₩ ℔ net; ⅝ in. diam. 4c ₩ ℔ net.
Patent Headed Harrow Teeth, packed in casks, ½c ₩ ℔ ex
Skein Bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 5½c ₩ ℔ net; 9-16 in. diam. 6½c ₩ ℔ net; ½ in. diam. 7½c ₩ ℔ net. 1c ₩ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinges, ¾ to 1 in. diam. 9c ₩ ℔ net; ⅝ in. diam. 10c ₩ ℔ net; ½ in. diam. 12 c ₩ ℔ net.
Screw and Strap Hinges, in lots of 100 pairs or more, 14 to 36 in. long, 5½c ₩ ℔ net; 8, 10 & 12 in. long, 6½c ₩ ℔ net
Strap and T Hinges.....20 & 10 % off net, delivery as customary.
For purchases amounting to $250 between May 30th and December 31st, 5 % extra off.
Screw Hitching Rings.....$5 25 ₩ 100 net
Duck Nest Tuyere Irons.....$14 50 ₩ doz net
Cast Iron Washers.....₩ ℔ 4c net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long..... ₩ ℔ 4 c net
1 to 2 in. diam. from 4 to 8 ft. long..... " 4½c net
1 to 2 in. diam. from 1½ to 4 ft. long..... " 4½c net
⅞, ¾ and ⅝ in. diam. over 4 ft. long..... " 4¾c net
⅞, ¾ and ⅝ in. diam. from 1½ to 4 ft. long " 5¼c net
Bridge bolts with upset ends.....¼c. ₩ ℔ extra
Wrought iron plates, punched.....5c. ₩ ℔ net

WAGON HARDWARE.

Wagon Box Strap Bolts—
10 in. long by 7-16 at Screw End, ₩ set of 8 bolts.. 55c
12 " ¼ " " 8 " .. 70c
10 " 9-16 " " 8 " .. } 90c
12 " 9-16 " " 8 " ..
14 " 9-16 " " 8 " .. } $1 00
10 " ⅝ " " 8 " ..
12 " ⅝ " " 8 " .. } 1 00
14 " ⅝ " " 8 " ..
16 " ⅝ " " 8 " .. 1 10
5c ₩ set for each additional inch over 14 in. All lengths made.
In ordering Box Strap Bolts please give diameter at Screw End.
Wagon Box Rods, narrow track, each.....18c
" " wide track, each.....20c
Single Tree Irons, ₩ set of four pieces.....38c
Wrought Iron Bolster Plates, 2¾ in. wide, ₩ set.....60c
" " 3 " " 65c
" " 3¼ " " 70c
" " 3½ " " 75c
Wagon Brake Ratchets, each.....16½c
" " finished with guard, each..45 c
Wrought Hammer Straps, heavy pattern, each.....16 c
" " light " each.....13½c
" Rub Irons, each.....11 c
Stay Chain Hooks, each.....8 c
Double and Single Tree Clips, figure 1, each.....9 c
" " " 2, each.....10 c
" " " 3, each.....12 c
Strap Bolts, Rods, single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 50 sets.....dis 25 %
Wagon Box Staples, 1¼ to 2¼ in. to clinch, ₩ 1000 $11 00 net
" " " Bevel Box Iron, to rivet on, ₩ 1000 7 50 net
Neck Yoke Eyes, each.....4¼c net
" " with ⅝ rings, each.....7¾c net
King Bolts, ¾, 1, 1¼, and 1¼ in. diam.....₩ ℔ 4¾c net
Wagon Rivets, ex. large, flat, oval and steeple head, ¼ in. diam. all lengths..... " 8¼c net
Wagon Rivets, 3-16 in. diam., all lengths..... " 9¼c net
& Nails, in 5 ℔ paper boxes..... ₩ ℔ 1c extra
" in 25 ℔ wood ..... " ¼c extra
Wagon and Hinge Nails, ¼ in..... ₩ ℔ 17 c net
" " 3-16 in..... " 19 c net
Double Tree Plates..... " 8½c net
Coupling " ..... " 5½c net
Tongue " ..... " 9 c net
Neck Yoke Plates..... " 11 c net
Tongue Cap Iron, 1¼, 2 & 2¼ in. wide, same price ₩ ℔ as Band Iron.
Wagon Chains, Stay Lock and Tongue, 5-16 in. ₩ ℔ 10½c net. ¼ in., 11½c. net

DETROIT.

(Reported by Messrs Jewett & Root.)

Tin Plate.—Best Charcoal
IC, 10x14.....$11 50
IX, 10x14..... 14 25
XX, 10x14..... 17 00
IC, 12x12..... 12 00
IX, 12x12..... 14 75
IC, 14x20..... 12 50
IX, 14x20..... 15 25
XX, 14x20..... 18 00
XXX, 14x20..... 20 75
XXXX, 14x20..... 23 50
DC, 100 Plate..... 11 00
DX " 13 75
DXX " 16 50
DXXX " 19 25
DXXXX 100 Plate.. 22 00
IX, 14x14..... 23 25
IC, 10x14 W..... 11 00
IX, 10x14 W..... 14 75
Roofing Tin.—Best Char.
IX, " 14x20..... 13 25
IC, Terne, 20x28..... 22 00
IX, " 20x28..... 27 00
Coke Tin.—
IC, 10x14 Coke.....$10 00
IX, 10x14, Coke 12 75
IC, 14x20, " 11 00
Pig Tin.—
Large Pigs.....29c
Small Pigs.....29½c
Bars.....30c
Solder.—No. 1..... 18c
No. 2..... 15c
Sheet Zinc.—
In any quantity.....10½c
Bright Wire.
63 lbs. in bdl.....dis 40 %
Copper.—
Sheathing.....31c
Copper Bottoms.....32c
Planished Copper.—
Sheathing, 14x48.....38c
Boiler Size, No. 7.....40c
" " No. 8.....40c
" " No. 9.....40c
Sheet Iron.—
No. 18 Am. Com.....4 40
No. 24 Am. Com.....4 60
No. 26 Am. Com.....4 80
Patent Planished Russia, Nos. 24, 25 and 26....14c
Genuine Russia, No. 9, 10, 11 and 12.....18c
Broken bdls, ½c. extra.
W. D. WOOD'S & CO. 3 SHEET IRON.—
Nos. 15 to 20 Smooth $5 10
" 21 to 24..... 5 30
" 25 & 26..... 5 50
" 21 to 24 Char'l.. 6 80
" 25 & 26 " .. 7 00

Steel.

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Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.

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Unsurpassed, if equaled in quality.

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CAST STEEL,

Warranted most SUPERIOR and UNSURPASSED for

TOOLS and GRANITE ROCK DRILLS.

A full assortment of this universally approved OLD BRAND of English Steel, and

ARMITAGE'S GENUINE MOUSEHOLE ANVILS,

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JOHN HOGAN, Agent.

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Cast and Double Shear STEEL,

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table, Carving, Butcher and Shoe Knives, Turning Tools, Dies, Files, Clock or other Springs, Saws and Tools of every variety.

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In calling the attention of consumers of Steel in any of the parishes above enumerated, we would respectfully assure them of our ability to supply an article, that cannot be excelled in quality, temper, and adaptation in all respects to the various purposes for which it may be required. Half a century of practical experience in all departments of Steel manufacture, a long established reputation in England, and the Continent of Europe, and in the Eastern States principally of this Country, encourage us to solicit a universal trial of our Steel for the above or other purposes for which a first class material in quality, temper, and durability is needed.

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STEEL.

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Particular attention is paid to quality and temper for

Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c.

ALSO STEEL of superior quality for **Turning Tools, Taps, Dies, Drills,** &c.

Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c.

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(Established in 1848.)

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Pittsburgh, Pa.,

Manufacturers of **Extra Quality Tool**

CAST STEEL,

Patent Rolled

SAW PLATES,

All descriptions of **Cast and German**

Spring and Plow Steel

Elliptic and Side Springs, Seat Springs.

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators, Reaper Bars, ow Bars, &c., &c.

Warehouse, 83 Water and 100 First Streets.

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Crescent Steel Works,

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Manufacturers of all descrip[illegible] of

STEEL

EQUAL TO ANY IN THE MARKET.

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Gunpowder.

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DUPONT'S

Sporting, Shipping, and Mining

POWDER.

DUPONT'S GUNPOWDER MILLS

ESTABLISHED IN 1801,

Have maintained their great reputation years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle, and Diamond Grain Powder.

Also, SPORTING, MINING, SHIPPING, AND BLASTING POWDER,

of all kinds and descriptions.

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70 Wall Street, NEW YORK.

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LAFLIN & RAND POWDER CO.

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Orange Rifle, *Orange Ducking*
Lightning, *Audubon.*

SAFETY-FUSE at wholesale.

BARR'S ELLIPTIC

Steam Trap

THE BEST IN THE WORLD

SEND FOR A CIRCULAR.

Richards & Pike.

5th St., below Columbia Ave., Philadelphia.

GRAHAM BROS.,

London and Stockholm,

Engineers, Anglo-Swedish Merchants And Engineers' Agents.

First-class Makers of **Machinery & Specialities,** &c., desirous of extending their exports, will find it in their interest to supply us with full particulars and prices, &c., &c.

London—122 Cannon Street, E.C.

BOSTON.

(Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.)

Augers.—Watrous Ship.....dis 10 %
L'Hommedieu Ship.....dis 15 %
Axes.—Forester's Favorite, Bronzed.....$12 00
Blue Jackets, Blue..... 11 5
Excelsior, Black..... 11 00
Chopper's Pride, Bronzed..... 10 50
Red Cross, Red..... 10 00
Red Cross, Handled..... 12 50
Boy's Handled Blue Jackets..... 12 00
Axe Handles.—Wadleigh's Oak—
A (Extra) $2·50. B (No. 1) $2·00. C (No. 2) $1·50 ₱ doz
Bells, Sleigh—
Fancy Body, Patent Leather, Cloth Bound, White Metal, 30, No. 1.....$1·70
Fancy Body, Patent Leather, Cloth Bound, White Metal, 36, No. 1..... 1·80
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 30, No. 1..... ·88
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 36, No. 1..... 2·50
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 30, No. 1..... 3·38
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 36, No. 1..... 3·50
Shaft, Strap, White Metal, House Bells, extra, 6, No. 1.....per pair, 50c.
Common, 6, No. 1..... 45c.
Blind Hinges.—
Orr or Washburn's.....per hundred sets $9 50
Blind Fasts.—
Orr or Washburn's.....per hundred set $6 00
Bolts.—Carriage, Phila., "Girard Works.....dis 50&10 %
Borax.—Best Refined.....₱ ℔ 15c
Borers.—Angle, Backus'.....dis 30 %
Boring Machines.—Angle.....each $4 75
Common, Snell's quality.....each 3 75
Braces.—Barber's.....dis 40&5 %
Backus'.....dis 50 %
Spofford's.....dis 50 %
Amiaon.....dis 50 %
Brackets.—Star Bronzed.....dis 50&10 %
Star Japanned.....dis 60&10 %
Store Shelf.....dis 35 %
Brass Faucets.—L. & C.....dis 25 %
Butts.—Union Drilled Loose Joint.....dis 45&10 %
" " Wire Fast Joint.....dis 25&10 %
" " Acorn Loose Joint...dis 40&10 %
Brass Butts.....dis 30 %
Wrought Table Butts and Back Flaps.....dis 30 %
Wrought Narrow Butts.....dis 30 %
Can Openers—Sprague's.....dis 50 %
No. 1, Iron Handle.....$4·00
No. 2, Wood Handle.....4·50
Cartridges.—" U. S. Cartridge Co."....dis 50&10 %
Chisels.—"Buck Bros.' Sha' \Goods.....add 20 @ 22½ %
Sockets'.....add 22½ @ 25 %
Churns.—Lightning—
Redheffer patent..... 3 4 5 6 gall
per doz $22 00 $27 00 $31 50 $36 00
Coal Hods.....dis 35 %
Fancy Japanned, No. 4, 15 in., $8·00; 5, 16 in., $9·00; 6, 17 in., $10·00.
Fancy Galvanized, No. 4, 15 in., $11·50; 5, 16 in., $13·00; 6, 17 in., $14·00.
Perfection, Jap'd, No. 4, 15 in., $12·00; 5, 2 in., $13·00; 6, 17 in., $14·00.
Perfection, Galv'd, No. 4, 15 in., $15·00; 5, 16 in., $16·00; 6, 17 in., $17·00.
Morning Glory, Jap'd, No. 4, 15 in., $12·00; 5, 16 in., $13·00; 6, 17 in., $14·00.
Morning Glory, Galv'd, No. 4, 15 in., $15·00; No. 5, 16 in., $16·00; No. 6, 17 in., $17·00.
Compasses and Dividers.—Bemis'.....dis 35 %
P. S. & W.....dis 25 %
Cordage.—Manila (usual trade dis.).....₱ ℔, 15c
American Tarred Hemp Lath Yarn.....₱ ℔, 10c
Corn Hooks.....per doz $2·75
Cow Ties.....dis 10 %
No. 30, Open Ring, 3 foot, No. 6, with Toggle.....$3·70
No. 35, " 3 " No. 6, " Snap..... 3·90
No. 40, " 3½ " No. 5, " Toggle..... 4·20
No. 45, " 3½ " No. 5, " Snap..... 4·40
No. 50, " 4 " No. 4, " Toggle..... 4·85
No. 55, " 4 " No. 6, " Snap..... 5·00
No. 60, " 4½ " No. 3, " Toggle..... 5·60
No. 65, " 4½ " No. 3, " Snap..... 5·80
Crow Bars.—Iron. Steel Points.....₱ ℔, 5½c
"Sweet" Steel Bars.....₱ ℔ 11c
Brown's Steel Bars.....₱ ℔ 10c
K. P. & Co. Extra Drill Steel.....₱ ℔ 15c
Dividers.—Cook's Nickel Plated.....dis 15 %
Door Springs.—Stimson's Patent.—
No. 7, Light inside doors, $12·00.....dis 25 %
No. 8, " outside " $18·00.....dis 25 %
Torrey's.....$4·00
Egg Beaters.—Lightning, Redheffer pat..1 qt., 2 qts.
per doz $8 00 $12 00
Emery.—Alden.....₱ ℔ 6½c
Wellington Mills.....₱ ℔ 10c
Files.—Earl Smith & Co.'s English.....$5 to £ gold
American.....$5 to £ currency, less 12½ %
Nicholson.....new net list
Wheeler, Madden & Clemson.....£5 net
Stubb's Tapers, genuine, 3 in., $1·50; 3½, $1·62½, 4, $1·88; 4½, $2·13; 5, $2·50.
Funnel Irons.—$2·50 2·50 2·50 3·25 per doz
5, 5½, 6, 7 inch.
Deep Flange.—$3·50 5½, 4·00
5, 5½, 6 inch.
Hammers.—Maydole.....dis 5 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1¼, $·75
" " " " " bell face, No. 1, $11; 1¼, $·75.
Hangers & Rollers.—Novelty.....dis 30 %
Anti-Friction.....$1·25 per pair—dis 30 %
Hatchets.—Underhill Edge Tool Co.....dis 15 %
Hinges.—Strap and T, Stanley Works.....dis 35&10 %
Plate, Loose and Fast Joint.....₱ ℔ 6c
Wrought Screw Hook.....₱ ℔ 6½c
Knobs.—Young's Imp. Silverd Glass.....dis 45 %
Lanterns.—Tubular No. 0.....$9·50
Guarded, No. 74, (with kerosene oil and candle burners).....6·25
Lead.—Sheet and Pipe.....9c—less 10 %
Locks.—Norwalk Lock Co.....dis 45&5 %
Mattocks.—
K. P. & Co., axe finish, long cutter.....$13 00—dis 10 %
Short cutter.....12 75—dis 10 %
Meat Cutters.—" Miles's" Challenge.....dis. 20 %
No. 1, $22·00; 2, $30·00; 3, $40·00.
Metal.—Babbitt. No. 1, 35c; 2, 25c; 3, 16c; 4, 15c ₱ ℔
Nails.—10d and larger—dis 15c 100 keg lots.....$3 50
Nail Pullers.—Little Giant—Small.....per doz., $22·00
Little Giant—Large..... " 30·00
Padlocks.—Wilcox.....dis 45&5 %
All Brass, 2¼ inch, 2 keys, job lot.....$9 00
Paper.—Tar'd Sheathing.....₱ ℔ 2 c
Dry Sheathing..... " 3½c
" "Beaver Brand" Rosin Sized.. " 4½c
Tar'd " " " " 3½c
Felt " " " " 4½c
Picks.—
K. P. & Co. Axe Finish..₱ doz 5 to 6 $8·50; 6 to 7 $9·00
" Solid Eyes.....5 to 6 6 to 7
$9 00 $9 50
Pins.—Universal Hat and Coat all wood—
2 in.....₱ gross $2 50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Potato Digger.—
"Partridge," 6 square tine.....₱ doz $12 00
Shumway & Co., 6 round tine.....₱ doz 9 00
Pulleys.—Axle.....1¼ No. 15, 31c; 1¾ No. 18, 33c; 1¾ No. 28, 42c; 2 No. 29, 49c.
Nashua, Bronzed Face.....1¼, 30c; 2, 90c
Steel Axle " " .....2, $1·00
Pulley Blocks.—"Best Boston Make".....nec
Common Strapped Blocks—
4 5 6 7 inch.
Single, 75c. 85c. $1·00 $1·13 each.
Double, $1·00 1·12 1·25 1·60 "
Inside Iron Strapped Blocks—
5 6 7 8 9 10 inch.
Single, $1·00 1·13 1·35 2·00 2·25 1·75 each.
Double, 1·88 2·30 2·63 3·63 4·00 5·00 "
Inside Iron Strapped Blocks, with Patent Roller Bushings—
5 6 7 8 9 10 inch.
Single, $1·35 1·50 1·65 2·50 2·85 3·50 each.
Double, 2·50 3·00 3·38 4·63 5·00 6·50 "
Plated Ware.—Rogers bros.....dis 50 %
Plumb & Levels.—" Davis" Pat. Adjustable—
No. 1, Iron and Wood Center Levels.....dis 50 %
No. 2, First Quality Levels.....dis 60&10 %
No. 3, Iron Pocket " .....dis 35 %
No. 4, Level and Plumb Glasses.....dis 60&10 %
No. 5, Iron Pocket Levels, per square and straight edge.....dis 50&10 %
No. 6, Improved Iron Bench Planes.....dis 50&10 %
Pocket Knives.—Conn. Cutlery Co.....new net list
American Shear Co.....dis 33⅓ %
Rail Barn Door.—For Novelty and Anti-Friction Hangers.....per foot 7c.. dis 30 %
Rivets.—Black.....dis 25 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8,
13 13 14 14 15 16c ₱ ℔ net
Rubber Moldings.—" Harmon's".....dis 10 %
No. 2, for Windows.....per foot, 5c
No. 3, for Doors.....per foot, 10c
No. 5, " .....per foot, 12c
Sad Irons.—Bless & Drake.....₱ ℔ 3½
Sand Paper—0 to 2, $4·25; 2 to 3, $4·75.....dis 10 %
Saws.—*Hand and Panel—*
Wheeler, Madden & Clemson's, same list as "Disston's".....dis. 15 %
Disston's.....dis. 12½ %
Cross Cut—
Wheeler, Madden & Clemson X Cuts.....per ft., 37c
" " " "Star" X Cuts. " 60c
" " " Champion X Cut. " 50c
" " " One Man X Cut..each, $2·25
Boynton's genuine Lightning X Cut.....per ft., 60c
" " " One Man X Cut..each, $2·25
Circular—Wheeler, Madden & Clemson's.....dis. 25 %
Mill— " " " .....dis. 25 %
Screws.—American Screw Co.....revised list dis 62½ %
Aiken's.....dis 60&10 %
Scythe Stones.—
"Willoughby Lake," first quality.....₱ gross $6·50
" second quality..... " 3·00
Shovels.—O. Ames.....new list dis 12½ %
M. B. & D.....new list dis 12½ %
Snow, Malleable Iron Tip, D Handle—Agents for New England.....$6·50
Snow, Malleable Iron Tip, long Handle—Agents for New England.....5·50
Sifters.—Coal, Rice, &c.....$12 00
Spading Forks.—M. & F.....dis 25 %
Stone Pickers.—"Partridge," original...₱ doz $15 00
Tools.—Aiken's Pattern, 20 in set; Parr's, $8·00 per doz
Traps.—Oneida.....dis 20 %
Blake's.....dis 30 %
Vises.—K. P. & Co.'s Solid Box. Blacksmith....₱ ℔ 12c
Parker's Parallel.....dis 10 %
Backus.....dis 25 %
" Howards.' Parallel.....dis 20 %
Wardrobe Hooks.—Wire to drive.....₱ gross $1 00
Weather Strips.—"Harmon's".....per doz $5, dis 10 %
Weights.—Window Weights.....₱ ℔ 2c
Wedges—Axe.....₱ doz 35c
Wire.—
Eureka, in spools, No. 28 to 40 assorted...₱ gross $3 50
Wire Netting.—Clinton Wire Cloth Co., Green, Drab or Black.....₱ ft 5½c
Wrenches.—Genuine Wrenches, G. A. Coes..dis 40&5 %
Walton.....dis 50 %
Wringers.—
Novelty and Universal, Tub No. 2, Less than 2 doz, $64 00; 2 doz or more, 62 00
Bench A... less than 2 doz $82 00; 2 doz or more $80 00
" B... " " 90 00 " " 88 00
" C... " " 108 00 " " 105 00
Eureka.....per doz $58 00
Withington, Conley & Co.—
Hoes, Rakes, Forks, &c.....dis 33⅓ %

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz, 110 North Street, Boston, Importers and Commission Merchants.)

Iron.—Best Refined Bar Iron.....₱ ton $60 00 @ 63 50
"Burden Best" " " " 100 00
Swedish Bar Iron.....gold " 110 00
Norway Shapes.....gold " 125 00
Norway Nail Rods.....gold " 130 00
Sheet Iron, American, No. 2 extra, ₱ ℔ 4½c
" " Galvanized, No. 2 extra, " 9 c
" " Russian, No. 2 ex., gold " 14 c
Plate Iron, C. No. 1..... " 3½c
Iron Rails.....₱ ton $32 00
Steel Rails..... " 47 50
Pig Iron, Foundry, No. 1 extra.... " 29 00
" " No. 2 extra.... " 27 00
" Gray Forge..... " 25 00
" Scotch..... " 30 00 @ 32 00
Wrought Scrap Iron..... " 31 00
Old Rails..... " 27 00

Steel.—	₱ ℔	German...	₱ ℔ 9½c
Eng. Tool, gold	15½c	Spring...	8 c
American Tool	14c	Tire...	6½c
" Mach	9½c	Sleigh Shoe...	5 c
Bessemer.....	7 c	Toe Calk	7½c
Tin Plates.—₱ box	gold	**Copper.**—	₱ ℔
I. C. Char. 10x14	@ $8·75	Ingot.....	23½c
I. C. Coke 10x14	7 50 @ 8 00	Bolt.....	30c
Char. Roof, IC. 14x20.	8 00	Sheathing.....	33c
Coke " IC. 14x20.	7 00	**Lead.**—	₱ ℔
METALS.		Pig.....	7½c
Pig Tin.—	₱ ℔., gold	Sheet & Pipe.....	8½5
Banca.....	24c	**Zinc.**—Sheet..	₱ ℔ 10c
Straits.....	22c	**Spelter.**.....	₱ ℔ 7½c
English.....	19c	**Antimony.**	gold ₱ ℔ 12½c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Apple Parers.—Conqueror.....₱ doz., $2 75
Hudson's Rotary..... " 7 75
Axes.—Wm. Mann's, Red Warrior.....₱ do., $11 50
Wm. Mann's, W. Stewart's..... " 12 00
" C Marshall..... " 10 50
" Handled..... " $5 c extra
" Double Bitted..... " 2 50
H. L. B. & Co.'s L. & Co..... " 11 50
" Pioneer..... " 12 00
" James & Co..... " 11 00
Hunt's..... " 12 00
Axles.—Jones, Henry & Co.'s" Patent Lubricating, Half Patent, Swelled Taper, Plain Taper and Concord Axles.....dis 10 & 5 %
Common Axles (Pat. Lubricating), 1¼ inch and upward..... ₱ ℔. 6½c.
do. less than 1¼ inch..... " 7 c.
Bellows.—Best St. Louis make..60c ₱ in. dis 20&2½ %
Bells.—Troy, Church, School and Farm Bells..₱ ℔ 40c
"Improved Amalgam Bronzed," 15 in. $5·00; 17 in., $6·00; 19 in., $8·00.....dis 10 %
Belting.—"Boston Belting Co.'s Rubber..dis 30 & 7½ %
"Bradford & Sharp's" Oak-Tanned Leather....dis 30 %
Bolts.—Arms, Bell & Co.'s Carriage & Tire..dis 70&10 %
Arms, Bell & Co.'s Machine.....dis 30&10 %
Butts.—Western Butt Co.'s new list—
Narrow Fast Joint.....dis 25&10 %
Broad Fast Joint.....dis 3 &10 %
" Loose " .....dis 45&10 %
Reversible.....dis 40&10 %
" Japanned and Silver Tipped.....dis 40&10 %
Loose Joint "Acorn" " " .....dis 40&10 %
Wheeling Hinge Co.'s W't Fast Joint Narrow.....dis 30 %
" " " Broad.....dis 35 %
" " Loose Joint.....dis 35 %
" " Reversible.....dis 35 %
" " Table & B'k Flaps.....30 %
Churns.—Julian, No. 2, $7·00; No. 3, $7·50; No. 4, $8·50.....dis 20 %
Cider Mills.—
American Senior, $40·00; Am. Junior, $25·00....dis 15 %
Corn Knives.—Dunn Edge Tool Co.'s Cast.....5 75
Seymour Mfg. Co.'s Solid Steel Back.....5 00
Corn Shellers.—Sandwich Mfg. Co.'s—
Power Shellers.....dis 10 %
Hand Shellers.....Special rates
Corn Planters—Challenge, Horse.....$40·00 net
St. Louis, Hand..... per doz $15·00
Cotton Gins.—Dubois Patent.....dis 10 %
Crow Bars.—Steel Pointed.....₱ ℔ 6½c
Drag Saw Machines.—
Culver's Pon Drag Saw.....dis 10 %
Robinson's Patent Sweepstakes Drag Saw....dis 10 %
Fanning Mills.—Nash & Cutt's.....dis 15 %
Feed Cutters.—Improved Burdick National....dis 15 %
Sanford No. 1, $12·00; No. 2, $8·75.....net
Files.—Black Diamond, Mill.....$5·00 & currency.
" Bastard..... 5·00 & currency.
" Taper..... 5·00 & currency
Forges.—Keystone Portable Forge Co.'s.....dis 12½ %
Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks....dis 33⅓ %
" Handled Hoes.....dis 33⅓ %
Garden Seed Drills and Wheel Hoes.
Allen's Double Wheel Hoe.....dis
" Planet Drill, Nos. 2 and 3.....dis
" Combined Drill and Wheel Hoe.....dis
Grinding Mills.—French Burr Mills.....net
Challenge Feed Mills.....dis
Sedgebeer's Nonpareil Mills.....dis
Osage Corn and Cob Mill.....dis
Hammers.—Masons' Hammers.....₱ ℔ 20c
Smiths' Hand..... 20c
Handles.—No. 1 Fork, Hoe and Rake.....dis 20 %
No. 2 Fork, Hoe and Rake.....dis 40 %
Harrow Teeth.—1 inch iron.....₱ ℔ 4½c
⅞ and ¾ inch iron..... " 4¾c
Barbed or Headed..... " ½c extra
Hay and Cotton Presses.—
Dederick's Railroad.....dis 5 %
" Perpetual.....net
Hay Knives.—
Dunn Edge Tool Co.'s.....₱ doz $15 00—dis 15&5 %
Lightning (Weymouth's Patent).....₱ doz $20 00
Hinges—
Wheeling Hinge Co.'s Strap & T.....dis 33⅓&10 %
Horse Hay Fork.—Nellis' Harpoon.....dis 25 %
Horse Nails.—National Patent Pointed..... 25c rates
National Patent Pointed, extra finished..... 25c "
Horse Powers.—Pitts or Carey's Patent.....dis 10 %
Wheeler's Railway.....dis 10 %
Sandwich Lever.....dis 10 %
Horse Rasps.—Heller Bros.....dis 45 %
" Black Diamond".....$6·00 to the £ currency
Horse Shoes.—
Rhode Island (Perkin's Pattern).....₱ keg, $6 25
" Mule..... " 7 25
" Trotting Shoes " 8 75
Trafalgar Horse.....per keg $6 25
" Mule.....per keg 7 25
Hose.—
Boston Belting Co.'s Rubber Medium Sizes..dis 30&10 %
" " " Small Sizes, Hydrant.....dis 40 %
Ice Tools.—W. T. Wood & Co.'s Saws.....new list net
W. T. Wood & Co.'s Chest Hatchets.....new list net
" " Axes.....new list net
" " Loading Tongs.....new list net
" " Medium, Small and Family Tongs.....new list net
" " Chisels, Hooks and Grapples.....new list net
Lawn Mowers.—Archimedean.....dis 20&5 %
Charter Oak.....dis 30 %
Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks...₱ doz $13 00 @ 13 50
" " Grub Hoes, oval eye..... " 10 00 @ 11 50
Money Drawers.—
Pierpont & Co.'s Excelsior.....per doz $40·00 net
Nails.—Wheeling.....$3 25 rates
Packing.—Boston Belting Co.'s Rubber, Plain..dis 30 %
Boston Belting Co.'s Rubber, Pure.....dis 25&5 %
" " No. 2 Plain.....dis 40 %
" " Round and Square....dis 10&10 %
Picks.—Klein, Logan & Co.'s Railroad and Clay.....₱ doz $9 30 @ 11 00
Klein, Logan & Co.'s Coal..... " 7 45 @ 8 40
" " Pick..... " 12 00 @ 15 50
" " Stone..... " 14 40 @ 14 90
" " Tamping..... " 14 75 @ 15 35
" " Miners' Drifting..... " 10 25 @ 12 80
Plows.—Avery's Cast and Steel.....dis 15 %
Collins Cast Cast Steel.....new list net
Pekin Steel.....new list net
Post Hole Augers.—Clark's Patent—
No. 1, ₱ doz. $27; No. 2, $30; No. 3, $32.....dis 30 %
Pulleys.—5 inch.....per doz $4·25 net
4 inch.....per doz 3·25 net
Nellis' Patent.....new list dis 15 %
Pumps.
St. Louis, Farm, Patent Metal Lined...new list dis 50 %
Rakes.—Paddock's Premium Sulky.....$30 00 net
St. Louis Revolving 14 tooth..... 5 50 net
" " 16 " ..... 6 00 net
" Hand Hay Rake.....dis 10 %
Reaper Knives and Sections.—
Geo. Barnes & Co.'s Knives.....dis 40 %
" " Sections.....dis 40 %
Road Scrapers.—Steel.....dis 25 %
Cast Iron.....dis 10&2½ %
Sad Irons.—Mouflon Brand, Silver Polished...₱ ℔ 4c
Sash Weights.—Standard Solid Eyes.....₱ ℔ 3½ c
Saws.—Curtis & Co.....dis 10 %
Scythes.—Dunn Edge Tool Co.'s....new list dis 20&2½ %
Scythe Stones.—No. 1 Ind'n Pond ₱ gr's, $7 00
Extra Indian Pond..... " 7 50
Premium..... " 10 50 } dis 25
Diamond Grit..... " 13 00
Shovels and Spades.—Myers & Armor.....dis 15 %
O. Ames & Son.....dis 5 %
Grain Scoops, (Pat. Corrugated Straps) M. & A. dis 15 %
" " " T. Rowland's dis 15 %
" " " O. Ames & Son dis 5 %
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished.....₱ ℔ 15c
Solid Cast Steel..... " 25c
Snaths and Cradles.—Seymour Mfg. Co.'s...dis 20 %
Sorghum Machinery.—Bell Cane Mills.....dis 15 %
Scantlin's Seamless Evaporators.....dis 10 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express.....dis 12½ %
Blue Seat Springs.....dis 15 %
Vises.—Solid Box.....₱ ℔ 16c
Wilson Mfg. Co.'s.....dis 15 %
Wheelbarrows.—Railroad & Garden.....new list net
Wrenches.—Coes' Genuine.....dis 33⅓&5
Coes' Pattern.....dis 50&5
Wagons.—Whitewater Farm Wagons—
Thimble Skein.....No. 3, $·6; 3½, $90 3½, $81
Iron Axle.....No. 1½, $·0; 1⅝, $93 1¾, $90

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Char.	11 00	IX, continuous, 10 in. x 200 ft.	
IX, 10x14, "	13 50	IC, 10x14, best Coke	$10 00
IC, 12x12, "	11 50	IC, 10x14, good Coke	9 50
IX, 12x12, "	14 00	IC, 10x20, Terne	10 00
IC, 14x20, "	12 00	IX, 14x20, "	13 00
IX, 14x20, "	14 50	IC, 20x28, "	22 00
IC, 20x28, "	22 00	IX, 20x28, "	27 00
IX, 20x28, "	27 00	IC, continuous 30 in. x 200 ft.	

Block Tin.

Large Pigs	27c	Bars	27c
Small "	28c	L. & F	

Sheet Zinc.

Casks	₱ ℔ 10c	Sheet	₱ ℔ 10½c

Solder.

No. 1, Refined, in bars or plate	16c
No. 2, " " "	15c
Pig Lead	7c

Sheet Copper.—18 to 100 lbs. Sheets 30x60..... 31c
14 to 16 lbs., Sheets 30x60..... 31c
10 to 12 lbs., " " and 20x52..... 32c
6 to 9 lbs., " " 35c
Tinned, 14 and 16 oz. 14x48..... 30c
Planished, 14 and 16 oz. 14x48..... 38c
" No. 8 and 9..... 40c
Copper Bottoms..... 28c

Sheet Iron.—

	Common.	Smooth. Com.	Smooth Charcoal.	Smooth Juniata.
No. 24	4½c	5½c	8½c	8½c
25 & 26	4½c	5½c	7 c	9 c
27	4½c	6 c	7½c	9½c

Galvanized Iron..... dis 25 %

No. 18 to 20	14c	No. 22	15c
21 to 24	13c	28	16c
25 & 26	14c		

Russia Iron.—Perfect.....19c | No. 1 Stamped..... In sheets, 1c. higher.
American Russia.—A.....14c | B..... In sheets, 1c higher.

Lead.—Pig, 7½c | Bar, 8½c | Lead Pipe, in full coils, 8½c | Lead Pipe, when cut, 8½c | Sheet Lead, 8½c

Wire—Bright..... dis 30 %
Coppered..... dis 30 %
Galvanized Market Wire..... dis 45½ %
Copper Rivets and Burs..... dis 20 %
Russia Iron.—Nos. 9, 10, 11 and 12, ₱ ℔..... 17c
No. 1 stained, ₱ ℔..... 15c
Imitation Russia, ₱ ℔..... 14c
Retinned Stamped Ware..... dis 25 %

CHICAGO.

(Reported by Frank Sturges & Co., 72, 74 & 76 Lake St.)

Tin Plate.—

10x14, IC, Ch'l, Good	$	14x20, IX, Ch'l Best	$15 00
10x14, IC, " Best	11 50	14x20, IXX, " "	17 50
10x14 IX, " "	14 00	14x20, IXXX, " "	20 00
12x12, IC, " "	12 00	DC, 100 Plate, " "	11 50
12x12, IX, " "	14 50	DX, " "	14 00
14x20, IC, " "	12 50	DXX " "	16 50
14x20, IC, " "	12 50	DXXX " "	19 00

Roofing IC, Charcoal, Best..... 11 00
Roofing IX, Charcoal " 13 50
20x28, IC, Charcoal Roofing, Com 21 00
20x28, IC, " Fair..... 21 50
20x28, IC, " Best..... 22 00
20x28, IX, " " 26 50
10x14, IC, Coke Plates..... 10 00 @ 10 50
14x20, IC, " ..... 10 50 @ 11 00
10x20, IC, " 18 50

Block Tin.—
Large Pigs..... 26c | Bars..... 28c
Small..... 27c | Straits, 2c. higher.

Zinc.—Sheet, 500 to 1000 lb. Casks..... 10½c
Loose Sheets..... 11c
Slab Zinc or Spelter..... 7½ to 8c

Copper.—Bottoms..... 34c
Sheathing..... 33c
Planished..... 39c
" Boiler lengths..... 41c
Ingot..... 24c to 25c
Bolt..... 33c

Braziers' Sheets.—
30x60, 6 to 8 lbs.. ₱ ℔ 35c | 30x60, 15 to 100 lbs.. ₱ ℔ 31c
30x60, 10 & 12 lbs. " 33c

Solder.—F. S. & Co.'s make.
Best Fine..... 20c
No. 1..... 19c
Roofing..... 17c
Braziers' or Spelter Solder..... 32c to 35c

Antimony..... 17c
Babbit Metal—F. S. & Co.'s..... 16c
No. 2..... 14c

Sheet Iron.—

	Common.	Smooth. Com.	Smooth Charcoal.	Smooth Juniata.
No. 24	4½c	5½c	8½c	8½c
25 & 26	4½c	5½c	7 c	9 c
27	4½c	6 c	7½c	9½c

Galvanized Iron..... dis 25 %

No. 16 to 20	14c	No. 22	15c
21 to 24	13c	28	16c
25 & 26	14c		

Russia Iron.—Perfect..... 19c | No. 1 Stamped..... In sheets, 1c. higher.
American Russia.—A..... 14c | B..... In sheets, 1c higher.

Lead.—Pig, 7½c | Bar, 8½c | Lead Pipe, in full coils, 8½c | Lead Pipe, when cut, 8½c | Sheet Lead, 8½c

Wire—Bright..... dis 30 %
Coppered..... dis 30 %

TO ALL WHO USE STEAM-POWER!

We will put our Governor on any Engine, and guarantee it to prove itself superior to all others.

If, after a fair trial, it does not, we will take it off at our own expense.

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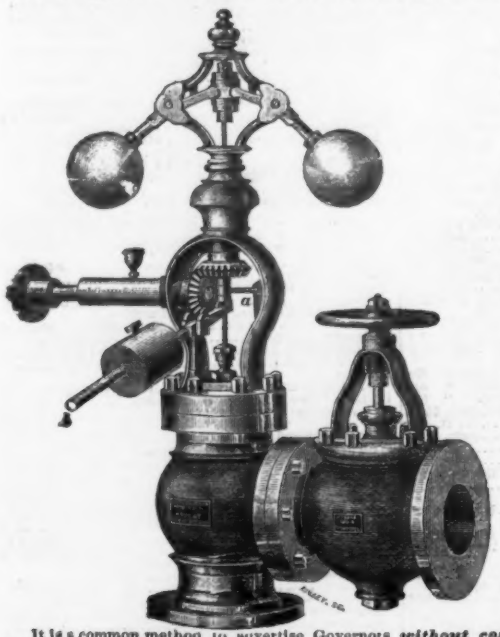

☞ When Governors are ordered, be particular and say Governor with Stop Valve, or without Stop Valve; and either Black, Finished or Portable, as you may require, and with or without Lever Attachment.

For dimensions and other particulars send for Illustrated List.

Capacity of Valve or Diameter of Steam Pipe in inches.	Price, Black.	Price, Bright Finish.	Price, Portable.	Price of Lever Attachment for altering speed.	Price of Stop Valve.
¾	18·00	20·00	17·00	..	..
⅞	20·00	22·00	19·00	..	..
1	24·00	27·00	22·00	2·00	5·25
1¼	29·00	33·00	27·00	2·25	6·64
1½	34·00	38·00	31·00	2·50	8·50
2	41·00	46·00	38·00	2·75	11·50
2¼	47·00	54·00	..	3·25	16·00
2½	50·00	57·00	47·00	3·50	17·00
2¾	55·00	62·00		3·75	19·00
3	62·00	70·00	No Larger Portable made than 2¾ in.	4·25	22·00
3½	71·00	80·00		4·50	27·00
4	81·00	92·00		5·00	32·00
4½	91·00	103·00		5·50	37·00
5	102·00	114·00		6·00	42·00
5½	116·00	129·00		6·50	48·00
6	134·00	148·00		7·00	55·00
7	160·00	176·00		8·00	69·00
8	199·00	219·00		9·00	83·00
9	230·00	255·00		10·00	..

No Charge for Boxing & Cartage.

It is a common method to advertise Governors *without cost*, unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the above list. We guarantee the Judson Governor will do all any other Governor can do, and in Accuracy and Durability—the main essentials—we guarantee it shall do more.

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Drop Hammers

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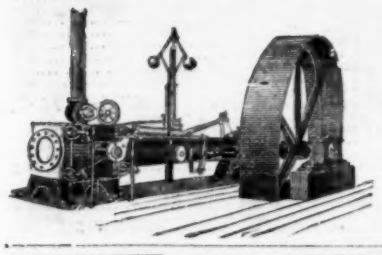

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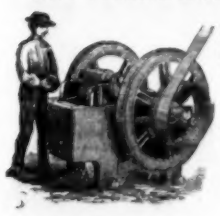

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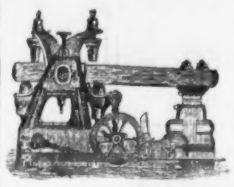

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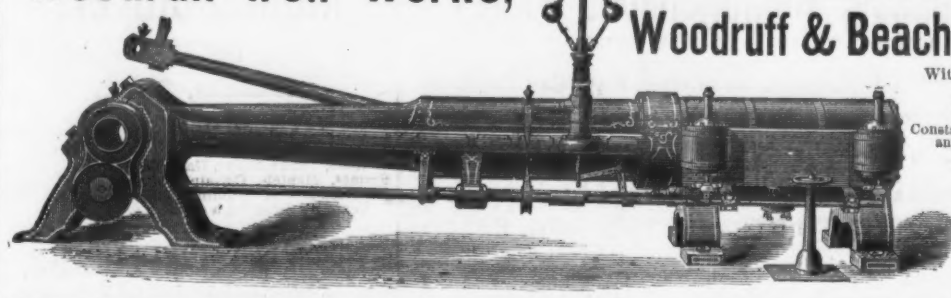

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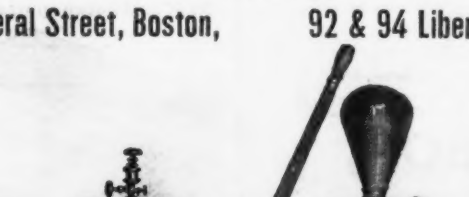

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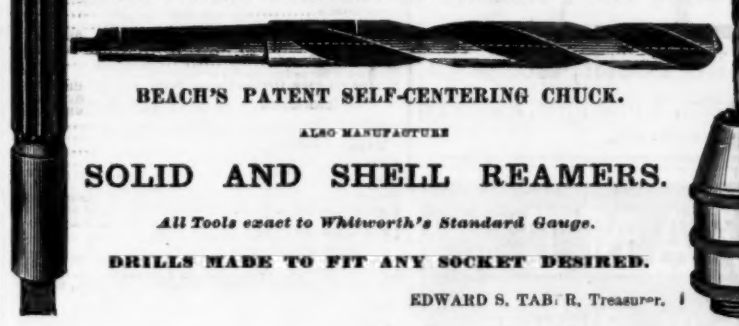

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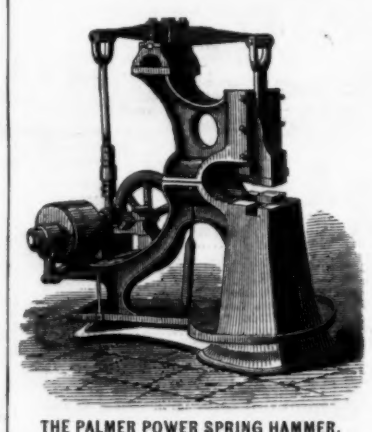

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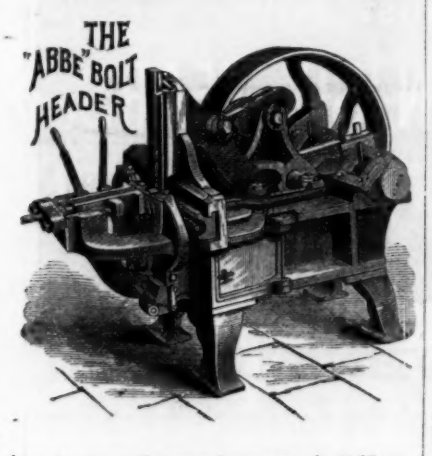

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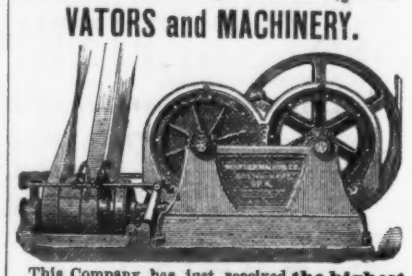

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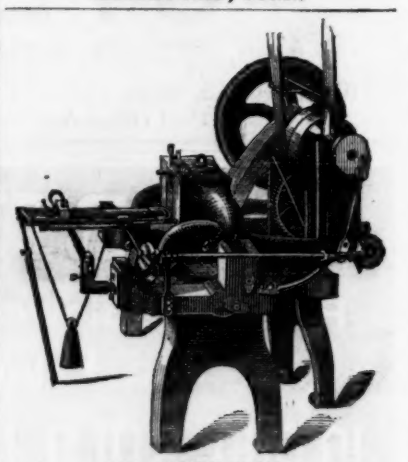

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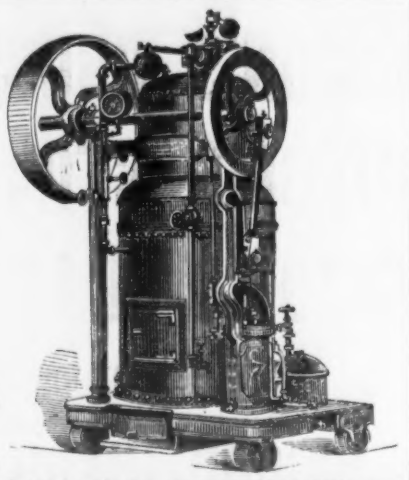

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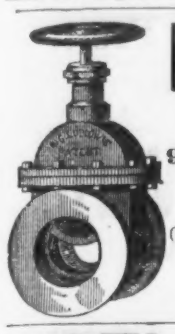

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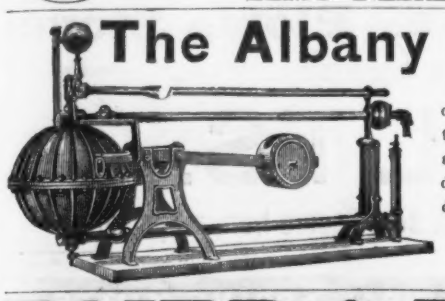

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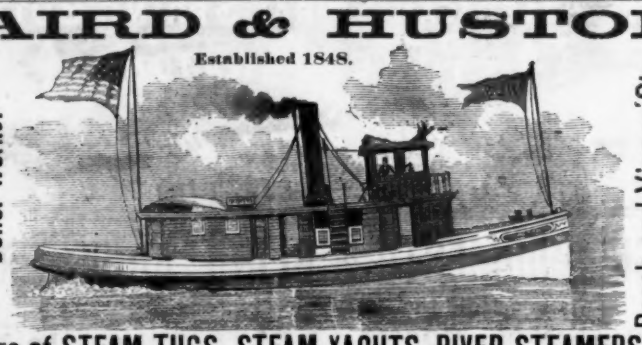

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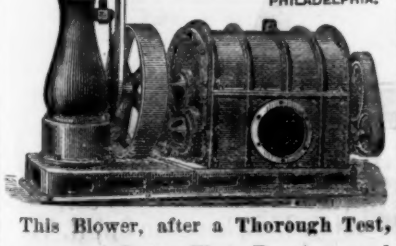

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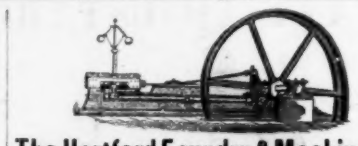

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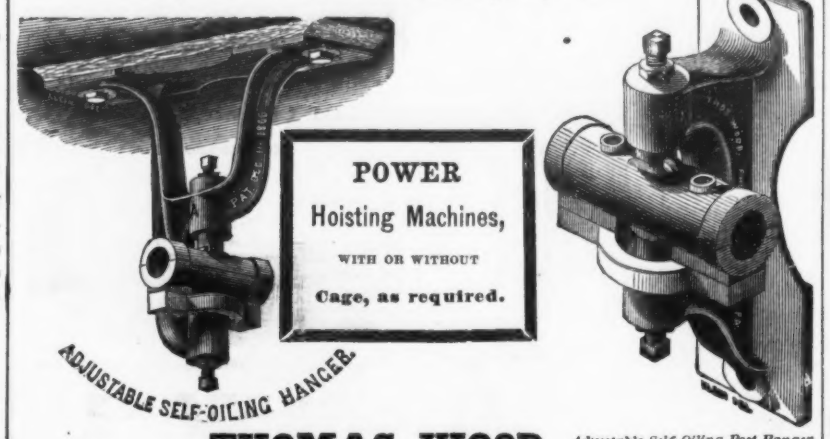

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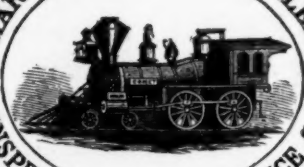

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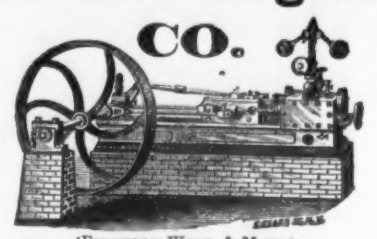

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These Engines have always maintained the very highest standard of excellence. We make the manufacture of Engines, Boilers and Saw Mills a specialty. We have the largest and most complete works in the country with machinery specially adapted to the work.

We keep constantly in process large numbers of Engines, which we furnish at the very lowest prices and on the shortest notice. We build Engines specially adapted to Mines, Saw Mills, Grist Mills, Tanneries, Cotton Gins, Threshers and all classes of manufacturing.

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LATHES, PLANERS,

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New Haven Mfg. Co.,

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P. BLAISDELL & CO.,
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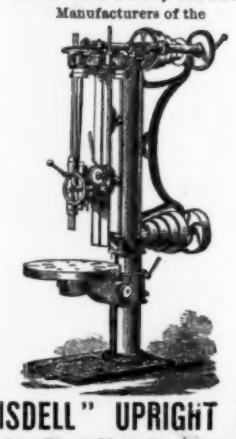

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We invite attention to the superior construction of this chuck. Its working parts are **absolutely protected from dirt and chips.** It is strong, compact and durable, and will hold the greatest variety of work, as the jaws are adjustable with a range the full diameter of the chuck. For Price List address,

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OF VARIOUS GRADES.

XXX Metal Nickel Hardening	50 cts. ℔ lb	D	20 cts.
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X Metal Copper Hardening	40 cts. ℔ lb	F	16 cts.
A " "	35 cts. ℔ lb	G	14 cts.
B " " "	30 cts. ℔ lb	H	12 cts.
C " "	25 cts. ℔ lb		

These metals are alloys of lead, with a large percentage of tin, antimony and copper, according to price.

These metals are the ordinary low priced Babbitt alloys, used where there is not much wear on the machinery, and where economy is required.

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CAST SPRING AND PLOW STEEL.
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NORWAY NAIL RODS ROLLED AND SLIT FROM SUPERIOR BRANDS.

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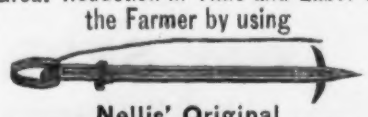
Great Reduction in Time and Labor to the Farmer by using



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Grapple and Pulleys; also, Nellis' Patent Stacker and Method of conveying Hay, Straw, &c. A ton of Hay can be delivered in three to five minutes to any part of Mow or Stack. The right of Stacker and Conveyer granted FREE to the Farmer purchasing our Horse Hay Fork and Fixtures during season of 1875. With it Pulleys can be attached or detached to rafter or beam, without the use of a ladder.

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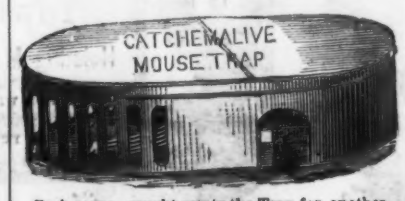

Each mouse caught resets the Trap for another.

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A Substitute for Steel and Wrought Forgings.
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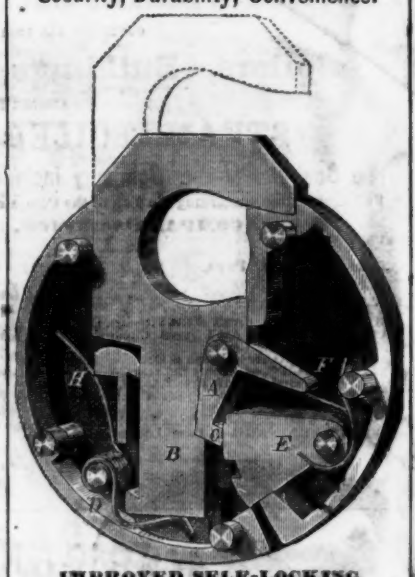

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Lamps, Bronzes,

Equal to any made, in great variety, all of our own manufacture.

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In Gold, Silver, Nickel, Japanned, Lined, & X C.

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And Require No HOOKS OR CATCHES on the House.

Patented June 11, 1872, and August 24, 1874.

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Easily Adjusted and Well Made.

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